

CHAPTER 61
WATER QUALITY STANDARDS

[Prior to 7/1/83, DEQ Ch 16]
[Prior to 12/3/86, Water, Air and Waste Management[900]]

567—61.1 Rescinded, effective August 31, 1977.

567—61.2(455B) General considerations.

61.2(1) Policy statement. It shall be the policy of the commission to protect and enhance the quality of all the waters of the state. In the furtherance of this policy it will attempt to prevent and abate the pollution of all waters to the fullest extent possible consistent with statutory and technological limitations. This policy shall apply to all point and nonpoint sources of pollution.

These water quality standards establish selected criteria for certain present and future designated uses of the surface waters of the state. The standards establish the areas where these uses are to be protected and provide minimum criteria for waterways having nondesignated uses as well. Many surface waters are designated for more than one use. In these cases the more stringent criteria shall govern for each parameter.

Certain of the criteria are in narrative form without numeric limitations. In applying such narrative standards, decisions will be based on the U.S. Environmental Protection Agency's methodology described in "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses," (1985) and on the rationale contained in "Quality Criteria for Water," published by the U.S. Environmental Protection Agency (1977), as updated by supplemental Section 304 (of the Act) Ambient Water Quality Criteria documents. To provide human health criteria for parameters not having numerical values listed in 61.3(3) Table 1, the required criteria will be based on the rationale contained in these EPA criteria documents. The human health criterion considered will be the value associated with the consumption of fish flesh and a risk factor of 10^{-5} for carcinogenic parameters. For noncarcinogenic parameters, the recommended EPA criterion will be selected. For Class C water, the EPA criteria for fish and water consumption will be selected using the same considerations for carcinogenic and noncarcinogenic parameters as noted above.

All methods of sample collection, preservation, and analysis used in applying any of the rules in these standards shall be in accord with those prescribed in 567—Chapter 63.

61.2(2) Antidegradation policy. It is the policy of the state of Iowa that:

a. Existing surface water uses and the level of water quality necessary to protect the existing uses will be maintained and protected.

b. Chemical integrity: For those water bodies where water quality significantly exceeds levels necessary to protect existing uses and the waters designated as high quality in 61.3(5)"e," that water quality will be maintained at or above existing quality, except when it is determined by the environmental protection commission after public hearing and after intergovernmental coordination and public participation provisions noted in the continuing planning process that there is need to allow a lower chemical quality because of necessary and justifiable economic and social development in the area. The state shall ensure adequate chemical quality to fully protect existing uses.

- (1) Bear Creek, mouth in Winneshiek County and tributary to the Upper Iowa River.
- (2) Bloody Run, mouth in Clayton County and tributary to the Mississippi River.
- (3) Catfish Creek from Swiss Valley Park in Dubuque County to its source.
- (4) Unnamed Creek known locally as Coldwater Creek with mouth in Winneshiek County and tributary to the Upper Iowa River.
- (5) Fenchel Creek, mouth to Richmond Springs, in Delaware County and tributary to the Maquoketa River.
- (6) Odell Branch (aka Fountain Spring Creek), mouth (section 10, T90N, R4W, Delaware County), tributary to Elk Creek, which is tributary to the Turkey River to west line of section 9, T90N, R4W, Delaware County.

(7) Iowa Great Lakes chain of lakes in Dickinson County, including West Lake Okoboji, Spirit Lake, East Lake Okoboji, Minnewashta Lake, Upper Gar Lake, and Lower Gar Lake.

(8) North Bear Creek, with mouth in Winneshiek County and tributary to Bear Creek, listed as number 1 in this listing.

(9) North Cedar Creek, with mouth in Clayton County and tributary to Sny Magill Creek.

(10) Sny Magill Creek, with mouth in Clayton County and tributary to the Mississippi River.

(11) Turkey River, from the point where it is joined by the Volga River in Clayton County to Vernon Springs in Howard County.

(12) Waterloo Creek, with mouth in Allamakee County and tributary to the Upper Iowa River.

(13) Maquoketa River, from confluence with South Fork Maquoketa River (section 16, T90N, R6W, Delaware County) to Highway 3 (north line of section 24, T91N, R7W, Fayette County).

(14) Spring Branch, mouth (section 10, T88N, R5W, Delaware County) to spring source (section 35, T89N, R5W, Delaware County).

(15) Little Turkey River, Clayton-Delaware County line to south line of section 11, T90N, R3W, Delaware County.

(16) Middle Fork Little Maquoketa River (aka Bankston Creek), west line of section 31, T90N, R1E to north line of section 33, T90N, R1W, Dubuque County.

(17) Brush Creek, north line of section 23, T85N, R3E to north line of section 1, T85N, R3E, Jackson County.

(18) Dalton Lake — Jackson County.

(19) Little Mill Creek, mouth (Jackson County) to west line of section 29, T86N, R4E, Jackson County.

(20) Mill Creek (aka Big Mill Creek), from confluence with Little Mill Creek in section 13, T86N, R4E, Jackson County, to confluence with Unnamed Creek, section 1, T86N, R3E, Jackson County.

(21) Unnamed Creek (tributary to Mill Creek), mouth (section 1, T86N, R3E, Jackson County) to west line of section 1, T86N, R3E, Jackson County.

(22) Unnamed Creek (aka South Fork Big Mill), tributary to Mill Creek, from mouth (section 8, T86N, R4E, Jackson County) to west line of section 17, T86N, R4E, Jackson County.

(23) Clear Creek, mouth (Allamakee County) to west line of section 25, T99N, R4W, Allamakee County.

(24) French Creek, mouth (Allamakee County) to east line of section 23, T99N, R5W, Allamakee County.

(25) Hickory Creek, mouth (Allamakee County) to south line of section 28, T96N, R5W, Allamakee County.

(26) Little Paint Creek, mouth to north line of section 30, T97N, R3W, Allamakee County.

(27) Paint Creek, from confluence with Little Paint Creek to road crossing in section 18, T97N, R4W, Allamakee County.

(28) Patterson Creek, mouth (Allamakee County) to east line of section 3, T98N, R6W, Allamakee County.

(29) Silver Creek, mouth (Allamakee County) to south line of section 31, T99N, R5W, Allamakee County.

(30) Village Creek, mouth (Allamakee County) to west line of section 19, T98N, R4W, Allamakee County.

(31) Wexford Creek, mouth to west line of section 25, T98N, R3W, Allamakee County.

(32) Buck Creek, mouth (Clayton County) to west line of section 9, T93N, R3W, Clayton County.

(33) Ensign Creek (aka Ensign Hollow), mouth (section 28, T92N, R6W, Clayton County) to spring source (section 29, T92N, R6W, Clayton County).

(34) South Cedar Creek (aka Cedar Creek), mouth (Clayton County) to north line of section 7, T92N, R3W, Clayton County.

(35) Bear Creek, mouth (Fayette County) to west line of section 6, T92N, R7W, Fayette County.

(36) Unnamed Creek (aka Glover's Creek), mouth to west line of section 15, T94N, R8W, Fayette County.

- (37) Grannis Creek, mouth to west line of section 36, T93N, R8W, Fayette County.
- (38) Mink Creek, mouth to west line of section 15, T93N, R7W, Fayette County.
- (39) Otter Creek, mouth (Fayette County) to confluence with Unnamed Creek (aka Glover's Creek) in section 22, T94N, R8W, Fayette County.
- (40) Nichols Creek (aka Bigalk Creek), mouth (section 18, T100N, R10W, Winneshiek County) to west line of section 23, T100N, R11W, Howard County.
- (41) Spring Creek, mouth (Mitchell County) to north line of section 8, T97N, R16W, Mitchell County.
- (42) Turtle Creek, mouth (Mitchell County) to east line of section 7, T99N, R17W, Mitchell County.
- (43) Wapsipinicon River, from the town of McIntire to north line of section 20, T99N, R15W, Mitchell County.
- (44) Bohemian Creek, mouth (Winneshiek County) to Howard County Road 58 (west line of section 2, T97N, R11W, Howard County).
- (45) Coon Creek, mouth (Winneshiek County) to road crossing in section 13, T98N, R7W, Winneshiek County.
- (46) Smith Creek (aka Trout River), mouth to south line of section 33, T98N, R7W, Winneshiek County.
- (47) Unnamed Stream (aka Trout Run), mouth to south line of section 27, T98N, R8W, Winneshiek County.
- (48) Twin Springs Creek, mouth to springs in Twin Springs Park in section 20, T98N, R8W, Winneshiek County.
- (49) Canoe Creek (aka West Canoe Creek), from Winneshiek County Road W38 to west line of section 8, T99N, R8W, Winneshiek County.
- c.* Standards and restrictions more stringent than those applied to other waters may be applied by the commission to those waters listed below when it is determined that such more stringent standards and restrictions are necessary to fully maintain water quality at existing levels.
- West Lake Okoboji in Dickinson County.
- d.* The Mississippi River and the Missouri River do not meet the criteria of 61.2(2) "c" but nevertheless constitute waters of exceptional state and national significance. Water quality management decisions will be made in consideration of the exceptional value of the resource.
- e.* In furtherance of the policy stated in 61.2(2) "b," there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources, and feasible management and regulatory programs pursuant to Section 208 of the Federal Water Pollution Control Act for nonpoint sources, both existing and proposed.
- f.* Physical and biological integrity: The waters designated as high-quality resource waters in 61.3(5) "e" will receive protection of existing uses through maintaining water quality levels necessary to fully protect existing uses or improve water quality to levels necessary to meet the designated use criterion in Tables 1, 2 and 3 and at preserving or enhancing the physical and biological integrity of these waters. This involves the protection of such features of the water body as channel alignment, bed characteristics, water velocity, aquatic habitat, and the type, distribution and abundance of existing aquatic species.
- g.* It is the intent of the antidegradation policy to protect and maintain the existing physical, biological, and chemical integrity of all waters of the state. Consistency with Iowa's water quality standards requires that any proposed activity modifying the existing physical, biological, or chemical integrity of a water of the state shall not adversely impact these resource attributes, either on an individual or cumulative basis. An adverse impact shall refer to the loss of or irreparable damage to the aquatic, semiaquatic or wildlife habitat or population, or a modification to the water body that would cause an overall degradation to the aquatic or wildlife population and diversity. The fish and wildlife division of the department and the U.S. Fish and Wildlife Service shall serve as consultants to the department for assessing impacts. Exceptions to the preceding will be allowed only if full mitigation is provided by the applicant and approved by the department.

For those waters of the state designated as high quality or high quality resource waters and the Mississippi and Missouri Rivers, any proposed activity that will adversely impact the existing physical, chemical, or biological integrity of that water will not be consistent with Iowa's water quality standards. Mitigation will not be allowed except in highly unusual situations where no other project alternatives exist. In these cases, full mitigation must be provided by the applicant and approved by the department.

h. This policy shall be applied in conjunction with water quality certification review pursuant to Section 401 of the Act. In the event that activities are specifically exempted from flood plain development permits or any other permits issued by this department in 567—Chapters 70, 71, and 72, the activity will be considered consistent with this policy. Other activities not otherwise exempted will be subject to 567—Chapters 70, 71, and 72 and this policy. The repair and maintenance of a drainage district ditch as defined in 567—70.2(455B,481A) will not be considered a violation of the antidegradation policy for the purpose of implementing Title IV of these rules. United States Army Corps of Engineers (Corps) nationwide permits 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 29, 30, 31, 32, 33, 34, 36, 37, 38, and 40, as promulgated December 13, 1996, are certified pursuant to Section 401 of the Clean Water Act. Regional permit numbers 2, 7, 12, and 20 of the Rock Island District of the Corps are also certified. No specific Corps permit or 401 certification is required for activities covered by these permits unless required by the nationwide permit or the Corps, and the activities are allowed subject to the terms of the nationwide and regional permits.

61.2(3) *Minimum treatment required.* All wastes discharged to the waters of the state must be of such quality that the discharge will not cause the narrative or numeric criteria limitations to be exceeded. Where the receiving waters provide sufficient assimilative capacity that the water quality standards are not the limiting factor, all point source wastes shall receive treatment in compliance with minimum effluent standards as adopted in rules by the department.

There are numerous parameters of water quality associated with nonpoint source runoff which are of significance to the designated water uses specified in the general and specific designations in 61.3(455B), but which are not delineated. It shall be the intent of these standards that the limits on such nonpoint source related parameters when adopted shall be those that can be achieved by best management practices as defined in the course of the continuing planning process from time to time. Existing water quality and nonpoint source runoff control technology will be evaluated in the course of the Iowa continuing planning process, and best management practices and limitations on specific water quality parameters will be reviewed and revised from time to time to ensure that the designated water uses and water quality enhancement goals are met.

61.2(4) *Regulatory mixing zones.* Mixing zones are recognized as being necessary for the initial assimilation of point source discharges which have received the required degree of treatment or control. Mixing zones shall not be used for, or considered as, a substitute for minimum treatment technology required by subrule 61.2(3). The objective of establishing mixing zones is to provide a means of control over the placement and emission of point source discharges so as to minimize environmental impacts. Waters within a mixing zone shall meet the general water quality criteria of subrule 61.3(2). Waters at and beyond mixing zone boundaries shall meet all applicable standards and the chronic and human health criteria of subrule 61.3(3), Tables 1 and 3, for that particular water body or segment. A zone of initial dilution may be established within the mixing zone beyond which the applicable standards and the acute criteria of subrule 61.3(3) will be met. For waters designated under subrule 61.3(5), any parameter not included in Tables 1, 2 and 3 of subrule 61.3(3), the chronic and human health criteria, and the acute criterion calculated following subrule 61.2(1), will be met at the mixing zone and zone of initial dilution boundaries, respectively.

a. Due to extreme variations in wastewater and receiving water characteristics, spatial dimensions of mixing zones shall be defined on a site-specific basis. These rules are not intended to define each individual mixing zone, but will set maximum limits which will satisfy most biological, chemical, physical and radiological considerations in defining a particular mixing zone. Additional details are noted in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on March 20, 1990, for considering unusual site-specific features such as side chan-

nels and sand bars which may influence a mixing zone. Applications for operation permits under 567—subrule 64.3(1) may be required to provide specific information related to the mixing zone characteristics below their outfall so that mixing zone boundaries can be determined.

b. For parameters included in Table 1 only (which does not include ammonia nitrogen), the dimensions of the mixing zone and the zone of initial dilution will be calculated using a mathematical model presented in the “Supporting Document for Iowa Water Quality Management Plans,” Chapter IV, July 1976, as revised on March 20, 1990, or from instream studies of the mixing characteristics during low flow. In addition, the most restrictive of the following factors will be met:

- (1) The stream flow in the mixing zone may not exceed the most restrictive of the following:
 1. Twenty-five percent of the seven-day, ten-year low stream flow for interior streams and rivers, and the Big Sioux and Des Moines Rivers.
 2. Ten percent of the seven-day, ten-year low stream flow for the Mississippi and Missouri Rivers.
 3. The stream flow contained in the mixing zone at the most restrictive of the applicable mixing zone length criteria, noted below.
- (2) The length of the mixing zone below the point of discharge shall be set by the most restrictive of the following:
 1. The distance to the juncture of two perennial streams.
 2. The distance to a public water supply intake.
 3. The distance to the upstream limits of an established recreational area, such as public beaches, and state, county and local parks.
 4. The distance to the middle of a crossover point in a stream where the main current flows from one bank across to the opposite bank.
 5. The distance to another mixing zone.
 6. Not to exceed a distance of 2000 feet.
 7. The location where the mixing zone contained the percentages of stream flow noted in 61.2(4)“*b*”(1).

(3) The width of the mixing zone is calculated as the portion of the stream containing the allowed mixing zone stream flow. The mixing zone width will be measured perpendicular to the basic direction of stream flow at the downstream boundary of the mixing zone. This measurement will only consider the distance of continuous water surface.

(4) The width and length of the zone of initial dilution may not exceed 10 percent of the width and length of the mixing zone.

c. The stream flow used in determining wasteload allocations to ensure compliance with the chronic and human health criteria of Table 1 will be that value contained at the boundary of the allowed mixing zone. This stream flow may not exceed the following percentages of the seven-day, ten-year low stream flow as measured at the point of discharge:

- (1) Twenty-five percent for interior streams and rivers, and the Big Sioux and Des Moines Rivers.
- (2) Ten percent for the Mississippi and Missouri Rivers.

The stream flow in the zone of initial dilution used in determining effluent limits to ensure compliance with the acute criteria of Table 1 may not exceed 10 percent of the calculated flow associated with the mixing zone.

d. For toxic parameters noted in Table 1, the following exceptions apply to the mixing zone requirements:

- (1) No mixing zone or zone of initial dilution will be allowed for waters designated as lakes or wetlands.
- (2) No zone of initial dilution will be allowed in waters designated as cold water.
- (3) The use of a diffuser device to promote rapid mixing of an effluent in a receiving stream will be considered on a case-by-case basis with its usage as a means for dischargers to comply with an acute numerical criterion.
- (4) A discharger to interior streams and rivers, the Big Sioux and Des Moines Rivers, and the Mississippi or Missouri Rivers may provide to the department, for consideration, instream data which

technically supports the allowance of an increased percentage of the stream flow contained in the mixing zone due to rapid and complete mixing. Any allowed increase in mixing zone flow would still be governed by the mixing zone length restrictions. The submission of data should follow the guidance provided in the "Supporting Document for Iowa Water Quality Management Plans" (Iowa Department of Water, Air and Waste Management, Chapter IV, July 1976, as revised on March 20, 1990).

e. For ammonia criteria noted in Table 3, the dimensions of the mixing zone and the zone of initial dilution will be calculated using a mathematical model presented in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on March 20, 1990, or from instream studies of the mixing characteristics during low flow. In addition, the most restrictive of the following factors will be met:

(1) The stream flow in the mixing zone may not exceed the most restrictive of the following:

1. One hundred percent of the seven-day, ten-year low stream flow for locations where the dilution ratio is less than or equal to 2:1.
2. Fifty percent of the seven-day, ten-year low stream flow for locations where the dilution ratio is greater than 2:1, but less than or equal to 5:1.
3. Twenty-five percent of the seven-day, ten-year low stream flow for locations where the dilution ratio is greater than 5:1.
4. The stream flow contained in the mixing zone at the most restrictive of the applicable mixing zone length criteria, noted below.

(2) The length of the mixing zone below the point of discharge shall be set by the most restrictive of the following:

1. The distance to the juncture of two perennial streams.
2. The distance to a public water supply intake.
3. The distance to the upstream limits of an established recreational area, such as public beaches, and state, county, and local parks.
4. The distance to the middle of a crossover point in a stream where the main current flows from one bank across to the opposite bank.
5. The distance to another mixing zone.
6. Not to exceed a distance of 2000 feet.
7. The location where the mixing zone contained the percentages of stream flow noted in 61.2(4) "e"(1).

(3) The width of the mixing zone is calculated as the portion of the stream containing the allowed mixing zone stream flow. The mixing zone width will be measured perpendicular to the basic direction of stream flow at the downstream boundary of the mixing zone. This measurement will only consider the distance of continuous water surface.

(4) The width and length of the zone of initial dilution may not exceed 10 percent of the width and length of the mixing zone.

f. For ammonia criteria noted in Table 3, the stream flow used in determining wasteload allocations to ensure compliance with the chronic criteria of Table 3 will be that value contained at the boundary of the allowed mixing zone. This stream flow may not exceed the percentages of the seven-day, ten-year low stream flow noted in 61.2(4) "e"(1) as measured at the point of discharge.

The pH and temperature values at the boundary of the mixing zone used to select the chronic ammonia criteria of Table 3 will be from one of the following sources. The source of the pH and temperature data will follow the sequence listed below, if applicable data exists from the source.

(1) Specific pH and temperature data provided by the applicant gathered at their mixing zone boundary. Procedures for obtaining this data are noted in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on March 20, 1990.

(2) Regional background pH and temperature data provided by the applicant gathered along the receiving stream and representative of the background conditions at the outfall. Procedures for obtaining this data are noted in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on March 20, 1990.

(3) The statewide average background values presented in Table IV-5 of the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on March 20, 1990.

The stream flow in the zone of initial dilution used in determining effluent limits to ensure compliance with the acute criteria of Table 3 may not exceed 5 percent of the calculated flow associated with the mixing zone for facilities with a dilution ratio of less than or equal to 2:1, and not exceed 10 percent of the calculated flow associated with the mixing zone for facilities with a dilution ratio of greater than 2:1. The pH and temperature values at the boundary of the zone of initial dilution used to select the acute ammonia criteria of Table 3 will be from one of the following sources and follow the sequence listed below, if applicable data exists from the source.

1. Specific effluent pH and temperature data if the dilution ratio is less than or equal to 2:1.

2. If the dilution ratio is greater than 2:1, the logarithmic average pH of the effluent and the regional or statewide pH provided in 61.2(4) "f" will be used. In addition, the flow proportioned average temperature of the effluent and the regional or statewide temperature provided in 61.2(4) "f" will be used. The procedures for calculating these data are noted in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on March 20, 1990.

g. For ammonia criteria noted in Table 3, the following exceptions apply to the mixing zone requirements.

(1) No mixing zone or zone of initial dilution will be allowed for waters designated as lakes or wetlands.

(2) No zone of initial dilution will be allowed in waters designated as cold water.

(3) The use of a diffuser device to promote rapid mixing of an effluent in a receiving stream will be considered on a case-by-case basis with its usage as a means for dischargers to comply with an acute numerical criterion.

(4) A discharger to interior streams and rivers, the Big Sioux and Des Moines Rivers, and the Mississippi and Missouri Rivers may provide to the department, for consideration, instream data which technically supports the allowance of an increased percentage of the stream flow contained in the mixing zone due to rapid and complete mixing. Any allowed increase in mixing zone flow would still be governed by the mixing zone length restrictions. The submission of data should follow the guidance provided in the "Supporting Document for Iowa Water Quality Management Plans" (Iowa Department of Water, Air and Waste Management, Chapter IV, July 1976, as revised on March 20, 1990).

h. Temperature changes within mixing zones established for heat dissipation will not exceed the temperature criteria in 61.3(3) "b"(5).

i. The appropriateness of establishing a mixing zone where a substance discharged is bioaccumulative, persistent, carcinogenic, mutagenic, or teratogenic will be carefully evaluated. In such cases, effects such as potential groundwater contamination, sediment deposition, fish attraction, bioaccumulation in aquatic life, bioconcentration in the food chain, and known or predicted safe exposure levels shall be considered.

61.2(5) Implementation strategy. Numerical criteria specified in these water quality standards shall be met when the flow of the receiving stream equals or exceeds the seven-day, ten-year low flow. Exceptions may be made for intermittent or low flow streams classified as significant resource warm waters or limited resource warm waters. For these waters, the department may waive the seven-day, ten-year low flow requirement and establish a minimum flow in lieu thereof. Such waiver shall be granted only when it has been determined that the aquatic resources of the receiving waters are of no significance at flows less than the established minimum, and that the continued maintenance of the beneficial uses of the receiving waters will be ensured. In no event will toxic conditions be allowed to occur in the receiving waters outside of mixing zones established pursuant to subrule 61.2(4). The policy for granting waivers is described in the "Supporting Document for Iowa Water Quality Management Plans" (Iowa Department of Water, Air and Waste Management, Chapter IV, July 1976, as revised on March 20, 1990). (Copies are available upon request to the Department of Natural Resources, Henry A. Wallace Building, 900 East Grand, Des Moines, Iowa 50319-0034. Copy also on file with the Iowa Administrative Rules Coordinator.)

All minimum flows established under the provisions of this rule will be published by the department. The minimum flows, commonly termed protected flows, are presented in "Iowa Water Quality Standards: Protected Flows For Selected Stream Segments," dated April 1, 1996. A copy of this document is available upon request from the department. A copy is also on file with the Iowa Administrative Rules Coordinator.

a. The allowable 3°C temperature increase criterion for warm water interior streams, 61.3(3) "f"(1), is based in part on the need to protect fish from cold shock due to rapid cessation of heat source and resultant return of the receiving stream temperature to natural background temperature. On low flow streams, in winter, during certain conditions of relatively cold background stream temperature and relatively warm ambient air and groundwater temperature, certain wastewater treatment plants with relatively constant flow and constant temperature discharges will cause temperature increases in the receiving stream greater than allowed in 61.3(3) "f"(1).

b. During the period November 1 to March 31, for the purpose of applying the 3°C temperature increase criterion, the minimum protected receiving stream flow rate below such discharges may be increased to not more than three times the rate of flow of the discharge, where there is reasonable assurance that the discharge is of such constant temperature and flow rate and continuous duration as to not constitute a threat of heat cessation and not cause the receiving stream temperature to vary more than 3°C per day.

c. Site-specific water quality criteria may be allowed in lieu of the specific numerical criteria listed in Tables 1 and 3 of this chapter if adequate documentation is provided to show that the proposed criteria will protect all existing or potential uses of the surface water. Site-specific water quality criteria may be appropriate where:

- (1) The types of organisms differ significantly from those used in setting the statewide criteria; or
- (2) The chemical characteristics of the surface water such as pH, temperature, and hardness differ significantly from the characteristics used in setting the statewide criteria.

Development of site-specific criteria shall include an evaluation of the chemical and biological characteristics of the water resource and an evaluation of the impact of the discharge. All evaluations for site-specific criteria modification must be coordinated through the department, and be conducted using scientifically accepted procedures approved by the department. Any site-specific criterion developed under the provisions of this subrule is subject to the review and approval of the U.S. Environmental Protection Agency. All criteria approved under the provisions of this subrule will be published periodically by the department. Guidelines for establishing site-specific water quality criteria can be found in "Water Quality Standards Handbook," published by the U.S. Environmental Protection Agency, December 1983.

d. A wastewater treatment facility may submit to the department technically valid instream data which provides additional information to be used in the calculations of their wasteload allocations and effluent limitations. This information would be in association with the low flow characteristics, width, length and time of travel associated with the mixing zone or decay rates of various effluent parameters. The wasteload allocation will be calculated considering the applicable data and consistent with the provisions and restrictions in the rules.

567—61.3(455B) Surface water quality criteria.

61.3(1) Surface water classification. All waters of the state are classified for protection of beneficial uses. These classified waters include general use segments and designated use segments.

a. *General use segments.* These are intermittent watercourses and those watercourses which typically flow only for short periods of time following precipitation in the immediate locality or as a result of discharges from wastewater treatment facilities, and whose channels are normally above the water table. These waters do not support a viable aquatic community of significance during low flow, and do not maintain pooled conditions during periods of no flow.

However, during periods when sufficient flow exists in the intermittent watercourses to support various uses, the general use segments are to be protected for livestock and wildlife watering, noncontact

recreation, crop irrigation, and industrial, agricultural, domestic and other incidental water withdrawal uses. The aquatic life existing within these watercourses during elevated flows will be protected from acutely toxic conditions.

b. Designated use segments. These are water bodies which maintain flow throughout the year, or contain sufficient pooled areas during intermittent flow periods to maintain a viable aquatic community of significance.

Designated use waters are to be protected for all uses of general use segments in addition to the specific uses assigned. Designated use segments include:

(1) Primary contact recreation (Class "A"). Waters in which recreational or other uses may result in prolonged and direct contact with the water, involving considerable risk of ingesting water in quantities sufficient to pose a health hazard. Such activities would include, but not be limited to, swimming, diving, water skiing, and water contact recreational canoeing.

(2) Cold water aquatic life (Class "B(CW)"). Waters in which the temperature, flow, and other habitat characteristics are suitable for the maintenance of a wide variety of cold water species, including nonreproducing populations of trout and associated aquatic communities.

(3) High quality water (Class "HQ"). Waters with exceptionally better quality than the levels specified in Tables 1, 2 and 3 and with exceptional recreational and ecological importance. Special protection is warranted to maintain the unusual, unique or outstanding physical, chemical, or biological characteristics which these waters possess.

(4) High quality resource water (Class "HQR"). Waters of substantial recreational or ecological significance which possess unusual, outstanding or unique physical, chemical, or biological characteristics which enhance the beneficial uses and warrant special protection.

(5) Significant resource warm water (Class "B(WW)"). Waters in which temperature, flow and other habitat characteristics are suitable for the maintenance of a wide variety of reproducing populations of warm water fish and associated aquatic communities, including sensitive species.

(6) Limited resource warm water (Class "B(LR)"). Waters in which flow or other physical characteristics limit the ability of the water body to maintain a balanced warm water community. Such waters support only populations composed of species able to survive and reproduce in a wide range of physical and chemical conditions, and are not generally harvested for human consumption.

(7) Lakes and wetlands (Class "B(LW)"). These are artificial and natural impoundments with hydraulic retention times and other physical and chemical characteristics suitable to maintain a balanced community normally associated with lake-like conditions.

(8) Drinking water supply (Class "C"). Waters which are used as a raw water source of potable water supply.

61.3(2) General water quality criteria. The following criteria are applicable to all surface waters including general use and designated use waters, at all places and at all times to protect livestock and wildlife watering, aquatic life, noncontact recreation, crop irrigation, and industrial, domestic, agricultural and other incidental water withdrawal uses not protected by the specific numerical criteria of subrule 61.3(3).

a. Such waters shall be free from substances attributable to point source wastewater discharges that will settle to form sludge deposits.

b. Such waters shall be free from floating debris, oil, grease, scum and other floating materials attributable to wastewater discharges or agricultural practices in amounts sufficient to create a nuisance.

c. Such waters shall be free from materials attributable to wastewater discharges or agricultural practices producing objectionable color, odor or other aesthetically objectionable conditions.

d. Such waters shall be free from substances attributable to wastewater discharges or agricultural practices in concentrations or combinations which are acutely toxic to human, animal, or plant life.

e. Such waters shall be free from substances, attributable to wastewater discharges or agricultural practices, in quantities which would produce undesirable or nuisance aquatic life.

f. The turbidity of the receiving water shall not be increased by more than 25 Nephelometric turbidity units by any point source discharge.

g. Total dissolved solids shall not exceed 750 mg/l in any lake or impoundment or in any stream with a flow rate equal to or greater than three times the flow rate of upstream point source discharges.

h. Water which enters a sinkhole or losing stream segment shall not exceed a fecal coliform content of 200 organisms/100 ml, except when the waters are materially affected by surface runoff; but in no case shall fecal coliform levels downstream from an existing discharge which may contain pathogens to humans be more than 200 organisms/100 ml higher than the background level upstream from the discharge. No new wastewater discharges will be allowed on watercourses which directly or indirectly enter sinkholes or losing stream segments.

61.3(3) Specific water quality criteria.

a. *Class "A" waters.* Waters which are designated as Class "A" in subrule 61.3(5) are to be protected for primary contact recreation. The general criteria of subrule 61.3(2) and the following specific criteria apply to all Class "A" waters.

(1) From April 1 through October 31, the fecal coliform content shall not exceed 200 organisms/100 ml, except when the waters are materially affected by surface runoff; but in no case shall fecal coliform levels downstream from a discharge which may contain pathogens to humans be more than 200 organisms/100 ml higher than the background level upstream from the discharge.

(2) The pH shall not be less than 6.5 nor greater than 9.0. The maximum change permitted as a result of a waste discharge shall not exceed 0.5 pH units.

b. *Class "B" waters.* All waters which are designated as Class B(CW), B(WW), B(LR), or B(LW) are to be protected for wildlife, fish, aquatic and semiaquatic life, and secondary contact water uses. The following criteria shall apply to all Class "B" waters designated in subrule 61.3(5).

(1) Dissolved oxygen. Dissolved oxygen shall not be less than the values shown in Table 2 of this subrule.

(2) pH. The pH shall not be less than 6.5 nor greater than 9.0. The maximum change permitted as a result of a waste discharge shall not exceed 0.5 pH units.

(3) General chemical constituents. The specific numerical criteria shown in Tables 1, 2, and 3 of this subrule apply to all waters designated in subrule 61.3(5). The sole determinant of compliance with these criteria will be established by the department on a case-by-case basis. Effluent monitoring or instream monitoring, or both, will be the required approach to determine compliance.

1. The acute criteria represent the level of protection necessary to prevent acute toxicity to aquatic life. Instream concentrations above the acute criteria will be allowed only within the boundaries of the zone of initial dilution.

2. The chronic criteria represent the level of protection necessary to prevent chronic toxicity to aquatic life. Excursions above the chronic criteria will be allowed only inside of mixing zones or only for short-term periods outside of mixing zones; however, these excursions cannot exceed the acute criteria shown in Tables 1 and 3. The chronic criteria will be met as short-term average conditions at all times the flow equals or exceeds either the seven-day, ten-year flow or any site-specific low flow established under the provisions of subrule 61.2(5).

3. The human health criteria represent the level of protection necessary, in the case of noncarcinogens, to prevent adverse health effects in humans, and in the case of carcinogens, to prevent a level of incremental cancer risk not exceeding 1 in 100,000. Instream concentrations in excess of the human health criteria will be allowed only within the boundaries of the mixing zone.

(4) The waters shall contain no substances in concentrations which will make fish or shellfish inedible due to undesirable tastes or cause a hazard to humans after consumption.

(5) Temperature.

1. No heat shall be added to interior streams or the Big Sioux River that would cause an increase of more than 3°C. The rate of temperature change shall not exceed 1°C per hour. In no case shall heat be added in excess of that amount that would raise the stream temperature above 32°C.

2. No heat shall be added to streams designated as cold water fisheries that would cause an increase of more than 2°C. The rate of temperature change shall not exceed 1°C per hour. In no case shall heat be added in excess of that amount that would raise the stream temperature above 20°C.

3. No heat shall be added to lakes and reservoirs that would cause an increase of more than 2°C. The rate of temperature change shall not exceed 1°C per hour. In no case shall heat be added in excess of that amount that would raise the temperature of the lake or reservoirs above 32°C.

4. No heat shall be added to the Missouri River that would cause an increase of more than 3°C. The rate of temperature change shall not exceed 1°C per hour. In no case shall heat be added that would raise the stream temperature above 32°C.

5. No heat shall be added to the Mississippi River that would cause an increase of more than 3°C. The rate of temperature change shall not exceed 1°C per hour. In addition, the water temperature at representative locations in the Mississippi River shall not exceed the maximum limits in the table below during more than 1 percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the table below by more than 2°C.

Zone II—Iowa-Minnesota state line to the northern Illinois border (Mile Point 1534.6)

Zone III—Northern Illinois border (Mile Point 1534.6) to Iowa-Missouri state line.

Month	Zone II	Zone III
January	4°C	7°C
February	4°C	7°C
March	12°C	14°C
April	18°C	20°C
May	24°C	26°C
June	29°C	29°C
July	29°C	30°C
August	29°C	30°C
September	28°C	29°C
October	23°C	24°C
November	14°C	18°C
December	9°C	11°C

c. *Class "C" waters.* Waters which are designated as Class "C" are to be protected as a raw water source of potable water supply. The following criteria shall apply to all Class "C" waters designated in subrule 61.3(5).

(1) Radioactive substances.

1. The combined radium-226 and radium-228 shall not exceed 5 picocuries per liter at the point of withdrawal.

2. Gross alpha particle activity (including radium-226 but excluding radon and uranium) shall not exceed 15 picocuries per liter at the point of withdrawal.

3. The average annual concentration at the point of withdrawal of beta particle and photon radioactivity from man-made radionuclides other than tritium and strontium-90 shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year.

4. The average annual concentration of tritium shall not exceed 20,000 picocuries per liter at the point of withdrawal; the average annual concentration of strontium-90 shall not exceed 8 picocuries per liter at the point of withdrawal.

(2) All substances toxic or detrimental to humans or detrimental to treatment process shall be limited to nontoxic or nondetrimental concentrations in the surface water.

(3) The pH shall not be less than 6.5 nor greater than 9.0.

TABLE 1: Criteria for Chemical Constituents*(all values as micrograms per liter unless noted otherwise)*

Human health criteria for carcinogenic parameters noted below were based on the prevention of an incremental cancer risk of 1 in 100,000. For parameters not having a noted human health criteria, the U.S. Environmental Protection Agency has not developed final national guideline values. For noncarcinogenic parameters, the recommended EPA criterion was selected. For Class C water, the EPA criteria for fish and water consumption were selected using the same considerations for carcinogenic and noncarcinogenic parameters as noted above.

Parameter		Use Designations				
		B(CW)	B(WW)	B(LR)	B(LW)	C
Alachlor	Acute	—	—	—	—	2
Aluminum	Chronic	87	3290	3290	742	—
	Acute	1435	9256	9256	1073	—
Antimony	Acute	—	—	—	—	6
Arsenic (III)	Chronic	200	200	1000	200	—
	Acute	360	360	1800	360	50
	Human Health	50	50	—	50	—
Asbestos	Acute	—	—	—	—	7 ^(a)
Atrazine	Acute	—	—	—	—	3
Barium	Acute	—	—	—	—	2000
Benzene	Acute	—	—	—	—	5
	Human Health	712.8	712.8	—	712.8	—
Benzo(a)Pyrene	Acute	—	—	—	—	.2
Beryllium	Acute	—	—	—	—	4
Cadmium	Chronic	1	15	25	1	—
	Acute	4	75	100	4	5
	Human Health +	168	168	—	168	—
Carbofuran	Acute	—	—	—	—	40
Carbon Tetrachloride	Acute	—	—	—	—	5
	Human Health	44.2	44.2	—	44.2	—
Chloride	Acute	—	—	—	—	250*

Chlordane	Chronic	.004	.004	.15	.004	—
	Acute	2.5	2.5	2.5	2.5	2
	Human Health	.006	.006	—	.006	—
Chlorobenzene	Human Health +	20	20	—	20	20
Chloropyrifos	Chronic	.041	.041	.041	.041	—
	Acute	.083	.083	.083	.083	—
Chromium (VI)	Chronic	40	40	200	10	—
	Acute	60	60	300	15	100
	Human Health +	3365	3365	—	3365	—
Copper	Chronic	20	35	55	10	—
	Acute	30	60	90	20	1000
	Human Health +	1000	1000	—	1000	—
Cyanide	Chronic	5	10	10	10	—
	Acute	20	45	45	45	200 ^(b)
Dalapon	Acute	—	—	—	—	200
Dibromochloropropane	Acute	—	—	—	—	.2
4,4-DDT + +	Chronic	.001	.001	.029	.001	—
	Acute	.9	.8	.95	.55	—
	Human Health	.0059	.0059	—	.0059	.0059
o-Dichlorobenzene	Acute	—	—	—	—	600
para-Dichlorobenzene	Acute	—	—	—	—	75
	Human Health +	2.6*	2.6*	—	2.6*	—
3,3-Dichloro/benzidine	Human Health	.2	.2	—	.2	.1
1,2-Dichloroethane	Acute	—	—	—	—	5
	Human Health	986	986	—	986	—
1,1-Dichloroethylene	Acute	—	—	—	—	7
	Human Health	32	32	—	32	—
cis-1, 2-Dichloroethylene	Acute	—	—	—	—	70
trans-1, 2-Dichlorethylene	Acute	—	—	—	—	100
Dichloromethane	Acute	—	—	—	—	5
1, 2-Dichloropropane	Acute	—	—	—	—	5

Di(2-Ethylhexyl)adipate	Acute	—	—	—	—	400
Di(2-ethylhexyl)phthalate	Acute	—	—	—	—	6
Dieldrin	Chronic	.0019	.0019	.50	.0019	—
	Acute	1.25	2.1	2.1	2.1	—
	Human Health	.0014	.0014	—	.0014	.0014
Dinoseb	Acute	—	—	—	—	7
2,3,7,8-TCDD (Dioxin)	Acute	—	—	—	—	.00003
	Human Health	.00014†	.00014†	—	.00014†	—
Diquat	Acute	—	—	—	—	20
2,4-D	Acute	—	—	—	—	70
Endosulfan	Chronic	.056	.15	.15	.15	—
	Acute	.11	.3	.3	.3	—
	Human Health	2400	2400	—	2400	1100
Endothall	Acute	—	—	—	—	100
Endrin	Chronic	.0023	.0023	.09	.0023	—
	Acute	.18	.18	.18	.18	2
	Human Health	8.1	8.1	—	8.1	—
Ethylbenzene	Acute	—	—	—	—	700
Ethylene dibromide	Acute	—	—	—	—	.05
Fluoride	Acute	—	—	—	—	4000
Glyphosate	Acute	—	—	—	—	700
Heptachlor	Chronic	.0038	.0038	.01	.0038	—
	Acute	.38	.38	.38	.38	.4
	Human Health	.002	.002	—	.002	—
Heptachlor epoxide	Acute	—	—	—	—	.2
Hexachlorobenzene	Acute	—	—	—	—	1
γ-Hexachlorocyclohexane (Lindane)	Chronic	.25	.33	.33	.33	—
	Acute	3.2	4.1	4.1	4.1	.2
	Human Health	.63	.63	—	.63	—
Hexachlorocyclopentadiene	Acute	—	—	—	—	50

Lead	Chronic	3	30	80	3	—
	Acute	80	200	750	80	50
Mercury (II)	Chronic	.05	.05	.25	.05	—
	Acute	6.5	6.5	10	2.5	2
	Human Health +	.15	.15	—	.15	—
Methoxychlor	Acute	—	—	—	—	40
Monochlorobenzene	Acute	—	—	—	—	100
Nickel	Chronic	350	650	750	150	—
	Acute	3250	5800	7000	1400	—
	Human Health +	4584	4584	—	4584	—
Nitrate as N	Acute	—	—	—	—	10*
Nitrate + Nitrite as N	Acute	—	—	—	—	10*
Nitrite as N	Acute	—	—	—	—	1*
Oxamyl (Vydate)	Acute	—	—	—	—	200
Parathion	Chronic	.013	.013	.013	.013	—
	Acute	.065	.065	.065	.065	—
Pentachlorophenol (PCP)	Chronic	(d)	(d)	(d)	(d)	—
	Acute	(d)	(d)	(d)	(d)	1
	Human Health	82	82	—	82	—
Picloram	Acute	—	—	—	—	500
Polychlorinated Biphenyls (PCBs)	Chronic	.014	.014	1	.014	—
	Acute	2	2	2	2	.5
	Human Health	.0004	.0004	—	.0004	.0004
Polynuclear Aromatic Hydrocarbons (PAHs)**	Chronic	.03	.03	3	.03	—
	Acute	30	30	30	30	—
	Human Health	.3	.3	—	.3	.028
Phenols	Chronic	50	50	50	50	—
	Acute	1000	2500	2500	1000	50
	Human Health +	300	300	—	300	—
Selenium (VI)	Chronic	10	125	125	70	—
	Acute	15	175	175	100	50
Silver	Chronic	2.5	8.5	8.5	.35	—
	Acute	30	100	100	4	50

2,4,5-TP (Silvex)	Acute	—	—	—	—	50
Simazine	Acute	—	—	—	—	4
Styrene	Acute	—	—	—	—	100
Tetrachlorethylene	Acute	—	—	—	—	5
Thallium	Acute	—	—	—	—	2
Toluene	Chronic	50	50	150	50	—
	Acute	2500	2500	7500	2500	1000
	Human Health +	300*	300*	—	300*	—
Total Residual Chlorine (TRC)	Chronic	10	20	25	10	—
	Acute	35	35	40	20	—
Toxaphene	Chronic	.0002	.0002	.019	.0002	—
	Acute	.81	.73	.79	.73	3
	Human Health	.0075	.0075	—	.0075	—
1,2,4-Trichlorobenzene	Acute	—	—	—	—	70
1,1,1-Trichlorethane	Acute	—	—	—	—	200
	Human Health +	173*	173*	—	173*	—
1,1,2-Trichloroethane	Acute	—	—	—	—	5
Trichloroethylene (TCE)	Chronic	80	80	80	80	—
	Acute	4000	4000	4000	4000	5
	Human Health	807	807	—	807	—
Trihalomethanes (total) ^(c)	Acute	—	—	—	—	100
Vinyl Chloride	Acute	—	—	—	—	2
	Human Health	5250	5250	—	5250	—
Xylenes (Total)	Acute	—	—	—	—	10*
Zinc	Chronic	200	450	2000	100	—
	Acute	220	500	2200	110	1000
	Human Health +	5000	5000	—	5000	—

* units expressed as milligrams/liter

** to include the sum of known and suspected carcinogenic PAHs

† expressed as nanograms/liter

+ Represents the noncarcinogenic human health parameters

- ++ The concentrations of 4,4-DDT or its metabolites; 4,4-DDE and 4,4-DDD, individually shall not exceed the human health criterion.
- (a) units expressed as million fibers/liter (longer than 10 micrometers)
- (b) measured as free cyanide
- (c) total trihalomethanes includes the sum of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform), and trichloromethane (chloroform)
- (d) Class B numerical criteria are a function of pH using the equation: Criterion ($\mu\text{g/l}$)= $e^{[1.005(\text{pH}) - x]}$, where $e = 2.71828$ and x varies according to the following table.

	B(CW)	B(WW)	B(LR)	B(LW)
Acute	3.65	4.83	3.34	4.83
Chronic	4.11	5.29	3.80	5.29

TABLE 2: Criteria for Dissolved Oxygen
(all values expressed in milligrams per liter as N)

	B(CW)	B(WW)	B(LR)	B(LW)
Minimum value for at least 16 hours of every 24-hour period	7.0	5.0	5.0	5.0*
Minimum value at any time during every 24-hour period	5.0	5.0	4.0	5.0*

**applies only to the upper layer of stratification in lakes*

TABLE 3a: Criteria for Ammonia Nitrogen -- Cold Water Streams
(all values expressed in milligrams per liter as Nitrogen)

Temp. °C		pH											
		6.5	7.0	7.2	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.8	9.0
1.0	Acute	28.5	22.9	19.7	16.0	12.4	9.2	6.5	4.1	2.6	1.7	1.0	.7
	Chronic	5.7	4.6	3.9	3.2	2.5	1.8	1.3	0.8	0.5	0.3	.2	.1
5.0	Acute	27.0	21.7	18.7	15.2	11.8	8.7	6.2	3.9	2.5	1.6	1.0	.7
	Chronic	5.4	4.3	3.7	3.0	2.4	1.7	1.2	0.8	0.5	.3	.2	.1
10.0	Acute	25.6	20.6	17.7	14.5	11.2	8.3	5.9	3.8	2.4	1.6	1.0	.7
	Chronic	5.1	4.1	3.5	2.9	2.2	1.7	1.2	0.8	0.5	.3	.2	.1
15.0	Acute	24.6	19.8	17.0	13.9	10.8	8.0	5.7	3.7	2.4	1.5	1.0	.7
	Chronic	4.9	4.0	3.4	2.8	2.2	1.6	1.1	0.7	0.5	.3	.2	.1
20.0	Acute	24.0	19.3	16.6	13.6	10.6	7.9	5.6	3.6	2.4	1.5	1.0	.7
	Chronic	4.8	3.9	3.3	2.7	2.1	1.6	1.1	0.7	0.5	.3	.2	.1
25.0	Acute	16.7	13.5	11.6	9.5	7.4	5.5	4.0	2.6	1.7	1.2	.8	.6

	Chronic	3.3	2.7	2.3	1.9	1.5	1.1	0.8	0.5	0.3	.2	.2	.1
30.0	Acute	11.8	9.6	8.2	6.8	5.3	4.0	2.9	1.9	1.3	.9	.6	.5
	Chronic	2.4	1.9	1.6	1.4	1.1	0.8	0.6	0.4	0.3	.2	.1	.1

TABLE 3b: Criteria for Ammonia Nitrogen -- Warm Water Streams and Lakes
(all values expressed in milligrams per liter as Nitrogen)

Temp. °C		pH											
		6.5	7.0	7.2	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.8	9.0
1.0	Acute	49.0	39.5	33.8	27.6	21.4	15.8	11.2	7.1	4.5	2.9	1.8	1.2
	Chronic	9.8	7.9	6.8	5.5	4.3	3.2	2.2	1.4	0.9	0.6	.4	.2
5.0	Acute	46.4	37.4	32.1	26.2	20.3	15.0	10.6	6.8	4.3	2.8	1.8	1.2
	Chronic	9.3	7.5	6.4	5.2	4.1	3.0	2.1	1.4	0.9	.6	.4	.2
10.0	Acute	44.0	35.5	30.5	24.9	19.3	14.3	10.1	6.5	4.1	2.7	1.8	1.2
	Chronic	8.8	7.1	6.1	5.0	3.9	2.9	2.0	1.3	0.8	.5	.4	.2
15.0	Acute	42.3	34.1	29.3	24.0	18.6	13.8	9.8	6.3	4.1	2.7	1.8	1.2
	Chronic	8.5	6.8	5.9	4.8	3.7	2.8	2.0	1.3	0.8	.5	.4	.2
20.0	Acute	41.2	33.3	28.6	23.4	18.2	13.5	9.7	6.2	4.1	2.7	1.8	1.2
	Chronic	8.2	6.7	5.7	4.7	3.6	2.7	1.9	1.2	0.8	.5	.4	.2
25.0	Acute	40.7	32.9	28.3	23.2	18.1	13.5	9.7	6.3	4.2	2.7	1.8	1.2
	Chronic	8.1	6.6	5.7	4.6	3.6	2.7	1.9	1.3	0.8	.5	.4	.2
30.0	Acute	20.4	16.5	14.2	11.7	9.1	6.8	5.0	3.3	2.2	1.5	1.1	.8
	Chronic	4.1	3.3	2.8	2.3	1.8	1.4	1.0	0.7	0.4	.3	.2	.2

TABLE 3c: Criteria for Ammonia Nitrogen -- Limited Resource Streams
(all values expressed in milligrams per liter as Nitrogen)

Temp. °C		pH											
		6.5	7.0	7.2	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.8	9.0
1.0	Acute	71.5	57.6	49.4	40.3	31.2	23.0	16.3	10.3	6.6	4.2	2.6	1.7
	Chronic	14.3	11.5	9.9	8.1	6.2	4.6	3.3	2.1	1.3	0.8	.5	.3
5.0	Acute	67.8	54.6	46.8	38.2	29.6	21.9	15.5	9.9	6.3	4.0	2.6	1.7
	Chronic	13.6	10.9	9.4	7.6	5.9	4.4	3.1	2.0	1.3	.8	.5	.3
10.0	Acute	64.2	51.8	44.4	36.3	28.2	20.8	14.8	9.4	6.1	3.9	2.6	1.7
	Chronic	12.8	10.4	8.9	7.3	5.6	4.2	3.0	1.9	1.2	.8	.5	.3
15.0	Acute	61.8	49.8	42.8	35.0	27.2	20.1	14.3	9.2	5.9	3.9	2.6	1.8
	Chronic	12.4	10.0	8.6	7.0	5.4	4.0	2.9	1.8	1.2	.8	.5	.4
20.0	Acute	60.2	48.6	41.7	34.2	26.6	19.7	14.1	9.1	6.0	4.0	2.7	1.9
	Chronic	12.0	9.7	8.3	6.8	5.3	3.9	2.8	1.8	1.2	.8	.5	.4

25.0	Acute	59.4	48.0	41.3	33.8	26.4	19.7	14.2	9.2	6.1	4.0	2.7	1.9
	Chronic	11.9	9.6	8.3	6.8	5.3	3.9	2.8	1.8	1.2	.8	.5	.4
30.0	Acute	29.7	24.1	20.7	17.0	13.3	10.0	7.2	4.8	3.2	2.2	1.6	1.2
	Chronic	5.9	4.8	4.1	3.4	2.7	2.0	1.4	1.0	0.6	.4	.3	.2

61.3(4) *Class “C” waters.* Rescinded IAB 4/18/90, effective 5/23/90.

61.3(5) *Surface water classification.*

a. Water use designation abbreviations.

(1) “A” means primary body contact recreation.

(2) “B” means wildlife, aquatic life, and secondary body contact uses. “WW” means significant resource warm water, “LR” means limited resource warm water, “LW” means lakes and wetlands warm water, “CW” means cold water.

(3) “C” means raw water source of potable water supply.

b. Key to the order of streams.

(1) Streams are listed in downstream to upstream sequence within a basin.

(2) Major streams (1st order) are described in entirety from downstream end to upstream end, before listing their tributary (2nd order) streams, or the next (major) stream.

(3) Tributary (2nd order) streams (if any) are then listed in downstream to upstream sequence, and each is described in entirety before listing its tributaries (3rd order), or before listing the next upstream 2nd order tributary.

(4) When a stream and all its tributaries are described in entirety, the next upstream equal order stream is then listed and described.

(5) The scheme is repeated through 3rd, 4th and 5th orders, as necessary.

(6) The relationship of tributaries is indicated in the list by the spacing from the left margin. Names of tributaries are indented two spaces from the name of the stream to which they are tributary, and equal order streams fall one below the other on the same margin.

Example:

- | | |
|---|---|
| <ul style="list-style-type: none"> (I) River <li style="padding-left: 2em;">(A) River <li style="padding-left: 2em;">(B) River <li style="padding-left: 4em;">(1) Creek <li style="padding-left: 4em;">(2) Creek <li style="padding-left: 6em;">(a) Creek <li style="padding-left: 4em;">(3) Creek <li style="padding-left: 2em;">(C) River (II) River | <p>(I) and (II) are first order streams and (II) is upstream from (I). (A), (B) and (C) are tributaries of (I). (B) is upstream from (A), and (C) is upstream from (B). (1), (2) and (3) are tributaries of (B). (2) is upstream from (1), and (3) is upstream from (2). (a) is a tributary of (2).</p> |
|---|---|

(7) Stream names are in accordance with "Drainage Areas of Iowa Streams," U.S. Geological Survey, March 1974, except that locally known names are used for streams not listed therein.

c. Stream abbreviations.

- (1) "R" means river.
- (2) "Cr." means creek.
- (3) "Br." means branch.
- (4) "D.D." means drainage ditch.
- (5) "E," "W," "N," and "S" are compass directions.
- (6) "Fk." means fork.
- (7) "aka" means also known as.

d. Location abbreviations.

- (1) "R" means range.
- (2) "T" means township.
- (3) "S" means section.
- (4) "Rd." means road.
- (5) "Hwy." means highway.
- (6) "Co." means county.
- (7) "St." means street.

Iowa Water Quality Standards Water Use Designations

e.

WESTERN IOWA RIVER BASINS

Western Iowa River Basins (Missouri, Big Sioux, and Little Sioux Rivers)

The streams or stream segments named below in alphabetical order are referenced within the Water Use Designations for the Western Iowa River Basins. Reference numbers provided in the alphabetical list correspond to numbered stream segments in the Water Use Designations.

Ashton Cr. - 39	Little Floyd R. - 74	Pickereel Run - 53
Bacon Cr. - 37	Little Maple R. - 34	Pierson Cr. - 38
Battle Cr. - 29	Little Ocheyedan R. - 55	Pigeon Cr. - 10
Beaver Cr. - 20	Little Rock R. - 84	Plum Cr. - 3
Big Cr. - 36	Little Sioux R. - 21	Prairie Cr. - 56
Big Muddy Cr. - 57	Little Sioux R. - 22	Rock Cr. - 41
Big Sioux R. - 76	Little Sioux R. - 23	Rock R. - 81
Boyer R. - 11	Little Sioux R. - 25	Rock R. - 82
Boyer R. - 12	Little Sioux R. - 24	Silver Cr. - 32
Broken Kettle Cr. - 77	Lost Island Outlet - 52	Silver Cr. - 42
Brooke Cr. - 48	Maple Cr. - 35	Sixmile Cr. - 80
Bull Run - 78	Maple R. - 26	Soldier R. - 16
Deep Cr. - 73	Maple R. - 27	Soldier R. - 17
Dry Run - 59	Milford Cr. - 60	Stony Cr. - 54
Dugout Cr. - 62	Mill Cr. - 43	Unnamed Cr. - 83
East Boyer R. - 14	Mink Cr. - 71	Unnamed Cr. - 88
East Soldier R. - 19	Missouri R. - 1	Unnamed Cr. - 89
Elk Cr. - 31	Missouri R. - 2	Waterman Cr. - 46
Floyd R. - 68	Monona Harrison Co. Ditch - 63	Waubonsie Cr. - 4
Floyd R. - 69	Montgomery Cr. - 51	West Branch Floyd R. - 70
Fox Run - 49	Moser Cr. - 9	West Fork Little Sioux R. - 61
Gray Cr. - 44	Mosquito Cr. - 6	West Fork Little Sioux R. - 64
Halfway Cr. - 33	Mosquito Cr. - 7	Whiskey Cr. - 66
Henry Cr. - 47	Mud Cr. - 65	Willow Cr. - 13
Indian Cr. - 79	Mud Cr. - 86	Willow Cr. - 40
Johns Cr. - 28	Ocheyedan R. - 58	Willow Cr. - 45
Jordan Cr. - 18	Odebolt Cr. - 30	Willow Cr. - 50
Kanaranzi Cr. - 87	Otter Cr. - 15	Willow Cr. - 72
Keg Cr. - 5	Otter Cr. - 85	Wolf Cr. - 67
Lake Manawa water intake - 8	Perry Cr. - 75	

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	H Q	HQR
WESTERN MAJOR RIVER - MISSOURI R. AND ITS TRIBUTARIES								
MISSOURI R. AND ITS TRIBUTARIES								
Missouri R.								
1. Iowa-Missouri state line to confluence with the Big Sioux R.	X	X						
Missouri R.								
2. City of Council Bluffs Water Works Intakes						X		
PLUM CR. AND ITS TRIBUTARIES								
Plum Cr.								
3. Mouth (S6, T69N, R43W, Fremont Co.) to confluence with an unnamed tributary (S29, T70N, R42W, Fremont Co.)			X					
WAUBONSIE CR. AND ITS TRIBUTARIES								
Waubonsie Cr.								
4. Mouth (S8, T70N, R43W, Fremont Co.) to confluence with an unnamed tributary (S25, T71N, R43W, Mills Co.)			X					
KEG CR. AND ITS TRIBUTARIES								
Keg Cr.								
5. Mouth (S6, T71N, R43W, Mills Co.) to confluence with an unnamed tributary (S 1/2, S35, T78N, R41W, Harrison Co.)			X					
MOSQUITO CR. AND ITS TRIBUTARIES								
Mosquito Cr.								
6. Mouth (Pottawattamie Co.) to confluence with Little Mosquito Cr. (S29, T75N, R43W, Pottawattamie Co.)		X						
Mosquito Cr.								
7. Confluence with Little Mosquito Cr. (Pottawattamie Co.) to confluence with Moser Cr. (S12, T80N, R40W, Shelby Co.)			X					
Lake Manawa water intake structure								
8. Intake near the Norfolk and Western Railroad crossing in the middle of S7, T74N, R43W, Pottawattamie Co.						X		
Moser Cr.								
9. Mouth (Shelby Co.) to confluence with an unnamed tributary (S30, T81N, R39W, Shelby Co.)			X					
PIGEON CR. AND ITS TRIBUTARIES								
Pigeon Cr.								
10. Mouth (S3, T75N, R44W, Pottawattamie Co.) to confluence with North Pigeon Cr. (S5, T76, R43W, Pottawattamie Co.)			X					
BOYER R. AND ITS TRIBUTARIES								
Boyer R.								
11. Mouth (Pottawattamie Co.) to confluence with an unnamed tributary (S 1/2, S33, T88N, R37W, Sac Co.)		X						
Boyer R.								
12. Confluence with an unnamed tributary (S33, T88N, R37W, Sac Co.) to confluence with an unnamed tributary (SE 1/4, SW 1/4, S5, T89N, R37W, Sac Co.)			X					
Willow Cr.								
13. Mouth (S28, T78N, R44W, Harrison Co.) to confluence South Willow Cr. (S27, T82N, R42W, Monona Co.)			X					
East Boyer R.								
14. Mouth (S10, T83N, R39W, Crawford Co.) to confluence with an unnamed tributary (NW 1/4, S15, T84N, R37W, Crawford Co.)			X					

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
WESTERN								
MAJOR RIVER - MISSOURI R. AND ITS TRIBUTARIES								
BOYER R. AND ITS TRIBUTARIES								
15.			X					
Otter Cr. Mouth (S18, T84N, R38W, Crawford Co.) to confluence with East Otter Cr. (NW 1/4, S13, T85N, R39W, Crawford Co.)								
SOLDIER R. AND ITS TRIBUTARIES								
16.		X						
Soldier R. Mouth (Harrison Co.) to confluence with E. Soldier R.								
17.			X					
Soldier R. Confluence with East Soldier River (S34, T84N, R42W, Monona Co.) to confluence with Little Soldier Cr. (S24, T86N, R40W, Ida Co.)								
18.			X					
Jordan Cr. Mouth (S16, T82N, R43W, Monona Co.) to confluence with an unnamed tributary (SE 1/4, NE 1/4, S10, T83N, R43W, Monona Co.)								
19.			X					
East Soldier R. Mouth (S34, T84N, R42W, Monona Co.) to confluence with Emigrant Cr. (S23, T84N, R41W, Crawford Co.)								
20.			X					
Beaver Cr. Mouth (S1, T85N, R41W, Crawford Co.) to confluence with an unnamed tributary (NW 1/4, S9, T85N, R40W, Crawford Co.)								
LITTLE SIOUX R. AND ITS TRIBUTARIES								
21.		X						
Little Sioux R. Mouth (Harrison Co.) to Hwy. 3 in Cherokee (S26, T92N, R40W, Cherokee Co.)								
22.	X	X						X
Little Sioux R. Hwy. 3 in Cherokee (S26, T92N, R40W, Cherokee Co.) to Linn Grove Dam (Buena Vista Co.)								
23.		X						X
Little Sioux R. Linn Grove Dam (Buena Vista Co.) to Clay Co., S17, T96N, R36W (east corporate limit, Spencer)								
24.		X						
Little Sioux R. West Line, S17, T96N, R36W, Clay Co. to confluence with West Fork Little Sioux River (Dickinson Co.)								
25.			X					
Little Sioux R. Confluence with W. Fork Little Sioux R. (S7, T99N, R37W Dickinson Co.) to the Iowa-Minnesota state line								
26.		X						
Maple R. Mouth (S17, T83N, R44W, Monona Co.) to confluence with Silver Cr. (S13, T88N, R40W, Ida Co.)								
27.			X					
Maple R. Confluence with Silver Cr. (S13, T88N, R40W, Ida Co.) to confluence with Maple Cr. (S5, T91N, R39W, Cherokee Co.)								
28.			X					
Johns Cr. (aka Clear Cr.) Mouth (S24, T90N, R44W, Plymouth Co.) to confluence with Rathbun Cr. (S26, T91N, R44W, Plymouth Co.)								
29.			X					
Battle Cr. Mouth (S26, T87N, R41W, Ida Co.) to confluence with an unnamed tributary (SW 1/4, S24, T88N, R41W, Ida Co.)								

**WESTERN
MAJOR RIVER - MISSOURI R. AND ITS TRIBUTARIES
LITTLE SIOUX R. AND ITS TRIBUTARIES**

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
Odebolt Cr.								
30. Mouth (Ida Co.) to confluence with an unnamed tributary (S24, T87N, R39W, Ida Co.)			X					
Elk Cr.								
31. Mouth (S1, T87N, R40W, Ida Co.) to confluence with an unnamed tributary (W 1/2, S36, T88N, R39W, Ida Co.)			X					
Silver Cr.								
32. Mouth (S13, T88N, R39W, Ida Co.) to confluence with South Silver Cr. (S16, T88N, R39W, Ida Co.)			X					
Halfway Cr.								
33. Mouth (S22, T89N, R39W, Ida Co.) to confluence with unnamed tributary (SE 1/4, S24, T89N, R39W, Ida Co.)			X					
Little Maple R.								
34. Mouth (SW 1/4, S34, T90N, R39W, Cherokee Co.) to confluence with an unnamed tributary (NE 1/4, S20, T90N, R38W, Buena Vista Co.)			X					
Maple Cr.								
35. Mouth (S5, T91N, R39W, Cherokee Co.) to confluence with an unnamed tributary (W 1/2, S1, T91N, R39W, Cherokee Co.)			X					
Big Cr.								
36. Mouth (S4, T87N, R43W, Woodbury Co.) to confluence with Coon Cr. (S35, T88N, R43W, Woodbury Co.)			X					
Bacon Cr.								
37. Mouth (S1, T88N, R43W, Woodbury Co.) to confluence with an unnamed tributary (S2, T88N, R42W, Woodbury Co.)			X					
Pierson Cr.								
38. Mouth (S34, T89N, R42W, Woodbury Co.) to confluence with an unnamed tributary (N 1/2, S20, T89N, R42W, Woodbury Co.)			X					
Ashton Cr.								
39. Mouth (S7, T89N, R41W, Ida Co.) to confluence with an unnamed tributary (S3, T89N, R41W, Ida Co.)			X					
Willow Cr.								
40. Mouth (S30, T90N, R41W, Cherokee Co.) to confluence with an unnamed tributary (N 1/2, S31, T91N, R41W, Cherokee Co.)			X					
Rock Cr.								
41. Mouth (S10, T90N, R41W, Cherokee Co.) to confluence with an unnamed tributary (SE 1/4, S21, T91N, R41W, Cherokee Co.)			X					
Silver Cr.								
42. Mouth (S32, T91N, R40W, Cherokee Co.) to confluence with an unnamed tributary (N 1/2, S22, T90N, R40W, Cherokee Co.)			X					
Mill Cr.								
43. Mouth (S14, T92N, R40W, Cherokee Co.) to confluence with West Branch Mill Cr. (S4, T95N, R41W, O'Brien Co.)			X					

SOUTHERN IOWA RIVER BASINS

The streams or stream segments named below in alphabetical order are referenced within the Water Use Designations for the Southern Iowa River Basins. Reference numbers provided in the alphabetical list correspond to numbered stream segments in the Water Use Designations.

Bluegrass Cr. - 29	Grand R. - 72	Sevenmile Cr. -38
Brush Cr. - 95	Greybill Cr. - 12	Shoal Cr. - 87
Brush Cr. - 110	Honey Cr. - 54	Silver Cr. - 6
Brushy Cr. - 51	Honey Cr. - 108	Silver Cr. - 7
Camp Cr. - 24	Indian Cr. - 9	South Cr. - 85
Carter Cr. - 113	Indian Cr. - 23	South Fork Chariton R. - 100
Chariton R. - 88	Jackson Cr. - 103	South Fox Cr. - 117
Chariton R. - 89	Jim Cr. - 14	South Wyaconda R. - 114
Chariton R. - 90	Jonathan Cr. - 81	Squaw Cr. - 66
Chariton R. - 91	Jordan Cr. - 13	Steel Cr. - 80
Chariton R. - 92	Jordan Cr. - 102	Tarkio R. - 31
Chariton R. - 93	Little R. - 78	Troublesome Cr. - 27
Cooper Cr. - 97	Little Walnut Cr. - 99	Turkey Cr. - 26
Crooked Cr. - 65	Locust Cr. - 83	Turkey Cr. - 58
Davids Cr. - 28	Long Cr. - 74	Twelvemile Cr. - 75
Dick Cr. - 107	Lotts Cr. - 70	Unnamed Cr. - 96
E. FK 102 R. - 52	Middle Branch 102 R. - 48	Unnamed Cr. - 105
E. FK 102 R. - 53	Middle Fork 102 R. -50	W. Jackson Cr. - 104
E. Nishnabotna R. - 19	Middle Fork Grand R. - 68	W. Nishnabotna R. - 2
E. Nishnabotna R. - 20	Middle Nodaway R. - 41	W. Nishnabotna R. - 3
East Branch West Nishnabotna - 15	Middle Nodaway R. - 42	Walker Br. - 101
East Fork Grand R. - 69	Middle Platte R. - 61	Walnut Cr. - 4
East Fork Medicine Cr. - 82	Middle Silver Cr. - 8	Walnut Cr. - 5
East Nodaway R. - 39	Mill Cr. - 21	Walnut Cr. - 64
East Nodaway R. - 40	Mud Cr. - 10	Walnut Cr. - 98
East Platte R. - 60	Ninemile Cr. - 106	Weldon R. - 79
East Tarkio Cr. - 32	Nishnabotna R. - 1	West Branch 102 R. - 46
Elk Cr. - 18	Nodaway R. - 34	West Branch 102 R. - 47
Elk Cr. - 73	Nodaway R. - 35	West Branch Cr. - 77
Elkhorn Cr. - 25	North Cr. - 86	West Fork 102 R. - 44
Farm Cr. - 11	North Fabius R. - 112	West Fork 102 R. - 45
Fisher Cr. - 22	North Fox Cr. - 116	West Fork Middle Nodaway - 43
Fivemile Cr. - 111	Packard Cr. - 94	West Fork West Nishnabotna - 16
Fourmile Cr. - 76	Platte Branch - 55	West Mill Cr. - 33
Fox R. - 115	Platte R. - 56	West Nodaway R. - 36
Gard Branch - 59	Platte R. - 57	West Nodaway R. - 37
Grand R. - 62	Plum Cr. - 67	West Tarkio Cr. - 30
Grand R. - 63	Rose Branch - 49	Willow Cr. - 17
Grand R. - 71	S. Shoal Cr. - 84	Wolf Cr. - 109

SOUTHERN MAJOR RIVER - NISHNABOTNA R. AND ITS TRIBUTARIES

- Nishnabotna R.
- 1. Iowa-Missouri state line (Fremont Co.) to confluence of the E. Nishnabotna R. and the W. Nishnabotna R. (Fremont Co.)

A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
	X						

**SOUTHERN
MAJOR RIVER - NISHNABOTNA R. AND ITS
TRIBUTARIES
W. NISHNABOTNA R. AND ITS TRIBUTARIES**

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
W. Nishnabotna R.								
2. Mouth (Fremont Co.) to confluence with W. Fk. of W. Nishnabotna R. (Shelby Co.)		X						
W. Nishnabotna R.								
3. Confluence with West Fork West Nishnabotna R. to confluence with an unnamed tributary (S34, T83N, R36W, Carroll Co.)			X					
Walnut Cr.								
4. Mouth (S8, T69N, R41W, Fremont Co.) to confluence with an unnamed tributary (S30/31 line, T73N, R38W, Montgomery Co.)		X						
Walnut Cr.								
5. Confluence with an unnamed tributary (S30/31 line, T73N, R38W, Montgomery Co.) to confluence with an unnamed tributary (S3, T76N, R38W, Pottawattamie Co.)			X					
Silver Cr.								
6. Mouth (Mills Co.) to Hwy. 41 (Mills Co.)		X						
Silver Cr.								
7. Mouth (S26, T71N, R41W, Mills Co.) to confluence with Little Silver Cr. (S34, T78N, R40W, Shelby Co.)			X					
Middle Silver Cr.								
8. Mouth (S31, T74N, R41W, Pottawattamie Co.) to confluence with Little Silver Cr. (S12, T74N, R42W, Pottawattamie Co.)			X					
Indian Cr.								
9. Mouth (S13, T72N, R41W, Mills Co.) to confluence with an unnamed tributary (S26, T72N, R40W, Mills Co.)			X					
Mud Cr.								
10. Mouth (S31, T73N, R40W, Mills Co.) to confluence with an unnamed tributary (NW 1/4, S14, T73N, R41W, Mills Co.)			X					
Farm Cr.								
11. Mouth (S9, T73N, R40W, Mills Co.) to confluence with Jordan Cr. (S31, T74N, R39W, Pottawattamie Co.)			X					
Greybill Cr.								
12. Mouth (S36, T74N, R40W, Pottawattamie Co.) to confluence with unnamed tributary (NW 1/4, S21, T75N, R39W, Pottawattamie Co.)			X					
Jordan Cr.								
13. Mouth (S31, T74N, R39W, Pottawattamie Co.) to confluence with Spring Cr. (S4, T74N, R39W, Pottawattamie Co.)			X					
Jim Cr.								
14. Mouth (S32, T77N, R39W, Pottawattamie Co.) to confluence with an unnamed tributary (S33, T77N, R39W, Pottawattamie Co.)			X					
East Branch West Nishnabotna R.								
15. Mouth (S29, T77N, R39W, Pottawattamie Co.) to confluence with Lone Willow Cr. (S9, T80N, R36W, Audubon Co.)			X					

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
SOUTHERN MAJOR RIVER - NISHNABOTNA R. AND ITS TRIBUTARIES								
W. NISHNABOTNA R. AND ITS TRIBUTARIES								
16.			X					
West Fork West Nishnabotna R. Mouth (Shelby Co.) to confluence with Maloney Branch (S29, T83N, R37W, Crawford Co.)								
17.			X					
Willow Cr. Mouth (Shelby Co.) to confluence with an unnamed tributary (S3, T81N, R39W, Shelby Co.)								
18.			X					
Elk Cr. Mouth (Shelby Co.) to confluence with an unnamed tributary (NW 1/4, S28, T82N, R37W, Crawford Co.)								
E. NISHNABOTNA R. AND ITS TRIBUTARIES								
19.		X						
E. Nishnabotna R. Mouth (Fremont Co.) to confluence of Troublesome Creek (Cass Co.)								
20.			X					
E. Nishnabotna R. Confluence with Troublesome Cr. (S32, T77N, R36W, Cass Co.) to confluence with an unnamed tributary (E 1/2, NW 1/4, S6, T80N R34W, Audubon Co.)								
21.			X					
Mill Cr. Mouth (S31, T68N, R41W, Fremont Co.) to confluence with an unnamed tributary (SE 1/4, NW 1/4, S15, T67N, R41W, Fremont Co.)								
22.			X					
Fisher Cr. Mouth (S27, T69N, R40W, Fremont Co.) to confluence with an unnamed tributary (S11/12 line, T68N, R40W, Fremont Co.)								
23.			X					
Indian Cr. Mouth (S17, T75N, R37W, Cass Co.) to confluence with Wolf Cr. (S35, T79N, R37W, Shelby Co.)								
24.			X					
Camp Cr. Mouth (S5/6 line, T77N, R37W, Cass Co.) to confluence with an unnamed tributary (S16, T77N, R37W, Cass Co.)								
25.			X					
Elkhorn Cr. Mouth (S20, T78N, R37W, Shelby Co.) to confluence with an unnamed tributary (S10, T78N, R37W, Shelby Co.)								
26.			X					
Turkey Cr. Mouth (S2, T75N, R37W, Cass Co.) to confluence with Eller Branch (S13, T76N, R36W, Cass Co.)								
27.			X					
Troublesome Cr. Mouth (S32, T77N, R36W, Cass Co.) to confluence with Fourmile Cr. (S8, T78N, R34W, Audubon Co.)								
28.			X					
Davids Cr. Mouth (S4, T78N, R35W, Audubon Co.) to confluence with Honey Cr. (S31, T79N, R34W, Audubon Co.)								
29.			X					
Bluegrass Cr. Mouth (S14, T79N, R35W, Audubon Co.) to confluence with an unnamed tributary from the West (S34, T80N, R35W, Audubon Co.)								
MAJOR RIVER - WEST TARKIO CR. AND ITS TRIBUTARIES								
30.			X					
West Tarkio Cr. Iowa-Missouri state line (Page Co.) to confluence with an unnamed tributary (S9, T69N, R38W, Page Co.)								

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
SOUTHERN MAJOR RIVER - TARKIO R. AND ITS TRIBUTARIES								
Tarkio R.								
31. Iowa-Missouri state line (Page Co.) to confluence with East Tarkio Cr. (S4, T72N, R37W, Montgomery Co.)			X					
EAST TARKIO CR. AND ITS TRIBUTARIES								
East Tarkio Cr.			X					
32. Mouth (S9, T68N, R38W, Page Co.) to confluence with an unnamed tributary (S7, T69N, R37W, Page Co.)								
MAJOR RIVER - WEST MILL CR. AND ITS TRIBUTARIES								
West Mill Cr.								
33. Iowa-Missouri state line to confluence with an unnamed tributary (NE 1/4, S12, T67N, R38W, Page Co.)			X					
MAJOR RIVER - NODAWAY R. AND ITS TRIBUTARIES								
Nodaway R.								
34. Iowa-Missouri state line (Page Co.) to confluence of Middle Nodaway R. and the W. Nodaway R. (Montgomery Co.)		X						
Nodaway R.								
35. City of Clarinda Water Works intake						X		
WEST NODAWAY R. AND ITS TRIBUTARIES								
West Nodaway R.								
36. Mouth (S33, T71N, R36W, Montgomery Co.) to confluence with Threemile Cr. (S35, T74N, R36W, Cass Co.)		X						
West Nodaway R.								
37. Confluence with Threemile Cr. (S35, T74N, R36W, Cass Co.) to confluence with Whislers Branch (S17, T74N, R35W, Cass Co.)			X					
Sevenmile Cr.								
38. Mouth (S33, T73N, R36W, Montgomery Co.) to confluence with Fourmile Cr. (S33, T75N, R36W, Cass Co.)			X					
EAST NODAWAY R. AND ITS TRIBUTARIES								
East Nodaway R.								
39. Mouth (S6, T67N, R36W, Page Co.) to confluence with Long Branch (S17/18 line, T70N, R35W, Taylor Co.)		X						
East Nodaway R.								
40. Confluence with Long Branch (S17/18 line, T70N, R35W, Taylor Co.) to confluence with Shanghai Cr. (S16, T73N, R32W, Adams Co.)			X					
Middle Nodaway R.								
41. Mouth (Montgomery Co.) to confluence with West Fork Middle Nodaway (S33, T74N, R33W, Adair Co.)		X						
Middle Nodaway R.								
42. Confluence with West Fork Middle Nodaway (Adair Co.) to confluence with an unnamed tributary (S1, T75N, R32W, Adair Co.)			X					
West Fork Middle Nodaway R.								
43. Mouth (S33, T74N, R33W, Adair Co.) to confluence with Rutt Br. (S15, T75N, R33W, Adair Co.)			X					

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
SOUTHERN MAJOR RIVER - WEST FORK 102 R. AND ITS TRIBUTARIES								
West Fork 102 R.								
44. Iowa-Missouri state line to the confluence with the West Branch 102 R. (S10, T68N, R35W, Taylor Co.)		X						
West Fork 102 R.								
45. Confluence with West Branch 102 R. (S10, T68N, R35W, Taylor Co.) to confluence with an unnamed tributary (S6, T70N, R34W, Taylor Co.)			X					
WEST BRANCH 102.R AND ITS TRIBUTARIES								
West Branch 102 R.								
46. Mouth (Taylor Co.) to confluence with Middle Branch 102 R. (S6, T69N, R34W, Taylor Co.)		X						
West Branch 102 R.								
47. Confluence with Middle Branch 102 R. (S6, T69N, R34W, Taylor Co.) to confluence with Willow Cr. (S29, T71N, R33W, Adams Co.)			X					
Middle Branch 102 R.								
48. Mouth (Taylor Co.) to bridge crossing at (S16/21, T70N, R33W, Taylor Co.)			X					
ROSE BRANCH AND ITS TRIBUTARIES								
Rose Branch								
49. Mouth (Taylor Co.) to confluence with an unnamed tributary (S34, T71N, R34W, Adams Co.)			X					
MAJOR RIVER - MIDDLE FORK 102 R. AND ITS TRIBUTARIES								
Middle Fork 102 R.								
50. Iowa-Missouri state line to Hwy. 149 bridge crossing (S22/23, T69N, R34W, Taylor Co.)			X					
BRUSHY CR. AND ITS TRIBUTARIES								
Brushy Cr.								
51. Mouth (Taylor Co.) to confluence with an unnamed tributary (S24, T68N, R35W, Taylor Co.)			X					
MAJOR RIVER - E. FK 102 R. AND ITS TRIBUTARIES								
E. FK 102 R.								
52. Iowa-Missouri state line to bridge crossing (Center, S8, T68N, R33W, Taylor Co.)		X						
E. FK 102 R.								
53. City of Bedford Water Works intake						X		
MAJOR RIVER - HONEY CR. AND ITS TRIBUTARIES								
HONEY CR. AND ITS TRIBUTARIES								
Honey Cr.								
54. Iowa-Missouri state line to confluence with an unnamed tributary (S14, T69N, R32W, Taylor Co.)			X					
MAJOR RIVER - PLATTE BRANCH AND ITS TRIBUTARIES								
Platte Branch								
55. Iowa-Missouri state line to bridge crossing (S16/17, T68N, R32W, Taylor Co.)			X					
MAJOR RIVER - PLATTE R. AND ITS TRIBUTARIES								
Platte R.								
56. Iowa-Missouri state line (S28, T67N, R32W, Taylor Co.) to confluence with an unnamed tributary (NE 1/4, S36, T68N, R32W, Taylor Co.)		X						

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
SOUTHERN MAJOR RIVER - PLATTE R. AND ITS TRIBUTARIES								
Platte R.								
57.			X					
Confluence with an unnamed tributary (NE 1/4, S36, T68N, R32W, Taylor Co.) to confluence with an unnamed tributary (NE 1/4, S16, T72N, R31W, Union Co.)								
TURKEY CR. AND ITS TRIBUTARIES								
Turkey Cr.								
58.			X					
Mouth (Ringgold Co.) to confluence with an unnamed tributary (SE 1/4, S29, T69N, R31W, Ringgold Co.)								
GARD BRANCH AND ITS TRIBUTARIES								
Gard Branch								
59.			X					
Mouth (Ringgold Co.) to confluence with an unnamed tributary (SE 1/4, S20, T70N, R31W, Ringgold Co.)								
EAST PLATTE R. AND ITS TRIBUTARIES								
East Platte R.								
60.			X					
Mouth (S9, T70N, R31W, Ringgold Co.) to confluence with Middle Platte R. (S33, T71N, R31W, Union Co.)								
Middle Platte R.								
61.			X					
Mouth (S33, T71N, R31W, Union Co.) to confluence with East Branch Middle Platte R. (S16, T71N, R31W, Union Co.)								
MAJOR RIVER - GRAND R. AND ITS TRIBUTARIES								
Grand R.								
62.		X						
Iowa-Missouri state line (S30, T67N, R31W, Ringgold Co.) to confluence with Crooked Cr. (S5, T68N, R30W, Ringgold Co.)								
Grand R.								
63.			X					
Confluence with Crooked Cr. (S5, T68N, R30W, Ringgold Co.) to bridge crossing (S25/36 line, T71N, R30W, Union Co.)								
WALNUT CR. AND ITS TRIBUTARIES								
Walnut Cr.								
64.			X					
Mouth (Ringgold Co.) to confluence with an unnamed tributary (NE 1/4, S36, T69N, R30W, Ringgold Co.)								
CROOKED CR. AND ITS TRIBUTARIES								
Crooked Cr.								
65.			X					
Mouth (Ringgold Co.) to confluence with Brush Cr. (S28, T69N, R30W, Ringgold Co.)								
SQUAW CR. AND ITS TRIBUTARIES								
Squaw Cr.								
66.			X					
Mouth (Ringgold Co.) to confluence with an unnamed tributary (S27, T70N, R30W, Ringgold Co.)								
PLUM CR. AND ITS TRIBUTARIES								
Plum Cr.								
67.			X					
Mouth (Ringgold Co.) to confluence with West Plum Cr. (S18, T70N, R30W, Ringgold Co.)								
MAJOR RIVER - MIDDLE FORK GRAND R. AND ITS TRIBUTARIES								
Middle Fork Grand R.								
68.			X					
Iowa-Missouri state line (Ringgold Co.) to confluence with an unnamed tributary (S13, T68N, R30W, Ringgold Co.)								

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
SOUTHERN MAJOR RIVER - EAST FORK GRAND R. AND ITS TRIBUTARIES								
East Fork Grand R.								
69.			X					
Iowa-Missouri state line (Ringgold Co.) to confluence with Goosebury Cr. (S2, T68N, R29W, Ringgold Co.)								
MAJOR RIVER - LOTTS CR. AND ITS TRIBUTARIES								
Lotts Cr.								
70.			X					
Iowa-Missouri state line (Ringgold Co.) to confluence with Tuckers Cr. (S12, T67N, R29W, Ringgold Co.)								
MAJOR RIVER - GRAND R. (AKA THOMPSON CR.) AND ITS TRIBUTARIES								
Grand R. (aka Thompson Cr.)								
71.		X						
Iowa-Missouri state line (Decatur Co.) to confluence with Long Cr. (SW 1/4, S8, T69N, R26W, Decatur Co.)								
Grand R. (aka Thompson Cr.)								
72.			X					
Confluence with Long Cr. (SW 1/4, S8, T69N, R26W, Decatur Co.) to confluence with Marvel Cr. (S8, T75N, R30W, Adair Co.)								
ELK CR. AND ITS TRIBUTARIES								
Elk Cr.								
73.			X					
Mouth (S18, T68N, R26W, Decatur Co.) to confluence with an unnamed tributary (S20, T69N, R27W, Decatur Co.)								
LONG CR. AND ITS TRIBUTARIES								
Long Cr.								
74.			X					
Mouth (S8, T69N, R26W, Decatur Co.) to confluence with East Long Creek (S36, T71N, R27W, Clarke Co.)								
TWELVEMILE CR. AND ITS TRIBUTARIES								
Twelvemile Cr.								
75.			X					
Mouth (S36, T71N, R28W, Union Co.) to confluence with an unnamed tributary (NW 1/4, NE 1/4, S12, T71N, R29W, Union Co.)								
FOURMILE CR. AND ITS TRIBUTARIES								
Fourmile Cr.								
76.			X					
Mouth (S2, T72N, R28W, Union Co.) to confluence with an unnamed tributary (E 1/2, S23, T72N, R28W, Union Co.)								
WEST BRANCH CR. AND ITS TRIBUTARIES								
West Branch Cr.								
77.			X					
Mouth (S34, T74N, R29W, Madison Co.) to confluence with an unnamed tributary (E 1/2, S32, T74N, R29W, Madison Co.)								
MAJOR RIVER - LITTLE R. AND ITS TRIBUTARIES								
Little R.								
78.			X					
Iowa-Missouri state line (Decatur Co.) to Dam at road crossing (SE 1/2, NW 1/4, S30, T69N, R25W, Decatur Co.)								
MAJOR RIVER - WELDON R. AND ITS TRIBUTARIES								
Weldon R.								
79.			X					
Iowa-Missouri state line (Decatur Co.) to confluence with Mormon Pool (S28, T70N, R24W, Decatur Co.)								
STEEL CR. AND ITS TRIBUTARIES								
Steel Cr.								
80.			X					
Mouth (S 10/11 line, T67N, R24W, Decatur Co.) to confluence with an unnamed tributary (NE 1/4, S11, T68N, R24W, Decatur Co.)								

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
SOUTHERN								
MAJOR RIVER - WELDON R. AND ITS TRIBUTARIES								
JOHNATHAN CR. AND ITS TRIBUTARIES								
Jonathan Cr.								
81.			X					
Mouth (S20, T69N, R24W, Decatur Co.) to confluence with Cobbsville Cr. (W 1/2, S6, T69N, R24W, Decatur Co.)								
MAJOR RIVER - EAST FORK MEDICINE CR. AND ITS TRIBUTARIES								
East Fork Medicine Cr.								
82.			X					
Iowa-Missouri state line (Wayne Co.) to confluence with an unnamed tributary (E 1/2, S24, T68N, R22W, Wayne Co.)								
MAJOR RIVER - LOCUST CR. AND ITS TRIBUTARIES								
Locust Cr.								
83.			X					
Iowa-Missouri state line (Wayne Co.) to confluence with an unnamed tributary (S15, T67N, R20W, Wayne Co.)								
MAJOR RIVER - S. SHOAL CR. AND ITS TRIBUTARIES								
S. Shoal Cr.								
84.			X					
Iowa-Missouri state line (Appanoose Co.) to confluence with North Cr. (N 1/2, S16, T67N, R18W, Appanoose Co.)								
SOUTH CR. AND ITS TRIBUTARIES								
South Cr.								
85.			X					
Mouth (S 1/2, S16, T67N, R18W, Appanoose Co.) to confluence with an unnamed tributary (W 1/2, S17, T67N, R18W, Appanoose Co.)								
NORTH CR. AND ITS TRIBUTARIES								
North Cr.								
86.			X					
Mouth (N 1/2, S16, T67N, R18W, Appanoose Co.) to confluence with an unnamed tributary (W 1/2, of SE 1/4, S8, T67N, R18W, Appanoose Co.)								
MAJOR RIVER - SHOAL CR. AND ITS TRIBUTARIES								
Shoal Cr.								
87.			X					
Iowa-Missouri state line (Appanoose Co.) to confluence with an unnamed tributary (S28, T68N, R19W, Appanoose Co.)								
MAJOR RIVER - CHARITON R. AND ITS TRIBUTARIES								
Chariton R.								
88.		X						
Iowa-Missouri state line (Appanoose Co.) to Hwy. 2 (Appanoose Co., S27, T69N, R17W)								
Chariton R.								
89.		X						X
Hwy. 2 (Appanoose Co., S27, T69N, R17W) to Rathbun Reservoir Dam (Appanoose Co., S35, T69N, R18W)								
Chariton R.								
90.						X		
Rathbun Regional Water Company water supply intake								
Chariton R.								
91.	X	X						X
Rathbun Reservoir Dam to upper extent of Rathbun Lake conservation pool								
Chariton R.								
92.			X					X
Upper extent of Rathun Lake conservation pool to Highway 14 (Lucas Co.)								
Chariton R.								
93.			X					
Highway 14 (Lucas Co.) to confluence with Chariton Creek (S19, T71N, R23W, Lucas Co.)								

DES MOINES RIVER BASIN

Des Moines River Basin (Lower Des Moines River, Upper Des Moines River, East Fork Des Moines River, Blue Earth River, and Raccoon River Subbasins).

The streams or stream segments named below in alphabetical order are referenced within the Water Use Designations for the Des Moines River Basin. Reference numbers provided in the alphabetical list correspond to numbered stream segments in the Water Use Designations.

Badger Cr. - 59	E Fk. Des Moines R. - 165	North R. - 55
Badger Cr. - 162	E Fk. Des Moines R. - 166	North R. - 56
Bay Branch - 88	E Fk. Des Moines R. - 167	North R. - 57
Bear Cr. - 20	Eagle Cr. - 148	North Raccoon River - 98
Bear Cr. - 80	East Buttrick Cr. - 107	Old Channel - Des Moines - 186
Bear Cr. - 138	East Cedar Cr. - 112	Orman Cr. - 64
Beaver Cr. - 128	East Fork Des Moines R. - 168	Otter Cr. - 41
Beaver Cr. - 164	Elk Run - 116	Otter Cr. - 150
Beaver Cr. - 183	English Cr. - 31	Outlet Cr. - 127
Big Cr. - 136	Fourmile Cr. - 67	Panther Cr. - 78
Big Creek - 134	Fourmile Cr. - 68	Pilot Cr. - 181
Big Creek - 135	Greenbrier Cr. - 103	Plum Cr. - 172
Black Cat Cr. - 171	Hardin Cr. - 108	Plunger Cr. - 66
Bloody Run - 169	Hickory Cr. - 100	Prairie Cr. - 120
Blue Earth R. - 187	Honey Cr. - 139	Prairie Cr. - 151
Bluff Cr. - 140	Howerdon Cr. - 65	Prairie Cr. - 155
Boone R. - 142	Indian Cr. - 123	Prairie Cr. - 179
Boone R. - 143	Indian Cr. - 180	Purgatory Cr. - 114
Boone R. - 144	Jack Cr. - 185	Raccoon R. - 70
Boone R. - 145	Jim Cr. - 63	Raccoon R. - 71
Brush Cr. - 19	Jones Cr. - 49	Raccoon R. - 72
Brush Cr. - 36	Lake Cr. - 117	Rock Cr. - 133
Brushy Cr. - 153	Lake Cr. - 118	S. Br. Lizard Cr. - 159
Brushy Cr. - 154	Lick Cr. - 14	S. Raccoon R. - 76
Brushy Creek - 94	Lindsey Cr. - 173	S. Raccoon R. - 77
Brushy Creek - 95	Little Beaver Cr. - 129	Short Cr. - 109
Buck Cr. - 147	Little Beaver Cr. - 130	Silver Cr. - 184
Buck Run - 126	Little Cedar Cr. - 125	Skillet Cr. - 141
Buffalo Cr. - 174	Little Fourmile Cr. - 69	Slough Cr. - 131
Buttrick Cr. - 105	Little Soap Cr. - 18	Snake Cr. - 102
Calhoun Cr. - 37	Little White Breast Cr. - 35	Soap Cr. - 16
Camp Cr. - 38	Lizard Cr. - 157	Soap Cr. - 17
Camp Cr. - 121	Lizard Cr. - 158	Soldier Cr. - 156
Cavitt Cr. - 46	Lotts Cr. - 170	Soldier Cr. - 178
Cedar Cr. - 28	Marrowbone Cr. - 115	South Avery Cr. - 23
Cedar Cr. - 29	Middle Avery Cr. - 24	South Fork Clanton Cr. - 50
Cedar Cr. - 60	Middle Beaver Cr. - 132	South Fork Middle R. - 53
Cedar Cr. - 110	Middle Branch Boone R. - 152	South R. - 39
Cedar Cr. - 111	Middle Cr. - 58	South Soap Cr. - 21
Cedar Cr. - 124	Middle R. - 43	Spring Branch - 91
Chequest Cr. - 15	Middle R. - 44	Spring Cr. - 160
Clanton Cr. - 47	Middle R. - 45	Sugar Cr. - 13
Clanton Cr. - 48	Middle Raccoon R. - 81	Sugar Cr. - 75
Coal Cr. - 40	Middle Raccoon R. - 82	Swan Lake Branch - 101
Competine Cr. - 32	Middle Raccoon R. - 83	Tom Cr. - 62
Cylinder Cr. - 182	Middle Raccoon R. - 84	Union Slough - 175
D.D. 94 - 149	Middle Raccoon R. - 85	Union Slough Ditch - 189
Dead Brier Cr. - 104	Middle Raccoon R. - 86	Unnamed Cr. - 92
Deer Cr. - 93	Miller Cr. - 26	Unnamed Cr. - 113
Deer Cr. - 163	Mosquito Cr. - 87	Village Cr. - 22
Des Moines R. - 1	Muchaknock Cr. - 27	W. Fk. Camp Cr. - 122
Des Moines R. - 2	Mud Cr. - 42	Walnut Cr. - 73
Des Moines R. - 3	Mud Cr. - 177	Walnut Cr. - 74
Des Moines R. - 4	N. Br. Lizard Cr. - 161	Welty Cr. - 52
Des Moines R. - 5	N. Raccoon R. - 96	West Buttrick Cr. - 106
Des Moines R. - 6	N. Raccoon R. - 97	West Fork Blue Earth R. - 188
Des Moines R. - 7	N. Raccoon R. - 99	West Panther Cr. - 79
Des Moines R. - 8	North Avery Cr. - 25	White Breast Cr. - 33
Des Moines R. - 9	North Branch North R. - 61	White Breast Cr. - 34
Des Moines R. - 10	North Buffalo Cr. - 176	White Fox Cr. - 146
Des Moines R. - 11	North Cedar Cr. - 30	Willey Branch - 90
Des Moines R. - 12	North Fork Clanton Cr. - 51	Willow Cr. - 89
Ditch No. 9 & 13 - 119	North R. - 54	Wolf Cr. - 137

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
DES MOINES								
MAJOR RIVER - LOWER DES MOINES R. AND ITS								
TRIBUTARIES								
DES MOINES R. AND ITS TRIBUTARIES								
Des Moines R.								
1. Mouth (Lee Co.) to confluence with the Raccoon River (includes Red Rock Reservoir)	X	X						
Des Moines R.								
2. Ottumwa Municipal Water Works intake						X		
MAJOR RIVER - UPPER DES MOINES R. AND ITS								
TRIBUTARIES								
Des Moines R.								
3. Raccoon R. to Center St. Dam in Des Moines		X						
Des Moines R.								
4. Center St. Dam in Des Moines to Hwy. I-80/I-35 (S17, T79N, R24W, Polk Co.)	X	X						
Des Moines R.								
5. Des Moines Water Works intake, Prospect Park (NE 1/4, S28, T79N, R24W, Polk Co.)						X		
Des Moines R.								
6. Hwy. I-80/I-35 to Saylorville Reservoir Dam		X						
Des Moines R.								
7. Saylorville Reservoir Dam to Polk-Dallas co. line	X	X						
Des Moines R.								
8. Saylorville Reservoir to Fraser Dam (S2, T84N, R27W, Boone Co.)		X						
Des Moines R.								
9. Fraser Dam (Boone Co.) to W. line of S15, T88N, R28W, Webster Co.		X						X
Des Moines R.								
10. West line of S15, T88N, R28W (Webster Co.) to dam of upper impoundment at Fort Dodge		X						
Des Moines R.								
11. Upper impoundment at Fort Dodge	X	X						
Des Moines R.								
12. Fort Dodge Upper impoundment to state line		X						
MAJOR RIVER - LOWER DES MOINES R. AND ITS								
TRIBUTARIES								
SUGAR CR. AND ITS TRIBUTARIES								
Sugar Cr.								
13. Mouth (Lee Co.) to bridge crossing (S8, T67N, R6W, Lee Co.)			X					
LICK CR. AND ITS TRIBUTARIES								
Lick Cr.								
14. Mouth (S19, T67N, R7W, Lee Co.) to confluence with an unnamed tributary (S32, T68N, R7W, Lee Co.)			X					
CHEQUEST CR. AND ITS TRIBUTARIES								
Chequest Cr.								
15. Mouth (S27, T69N, R10W, Van Buren Co.) to confluence with North Chequest Cr. (S25, T70N, R13W, Wapello Co.)			X					

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
DES MOINES								
MAJOR RIVER - LOWER DES MOINES R. AND ITS								
TRIBUTARIES								
SOAP CR. AND ITS TRIBUTARIES								
16.		X						
Soap Cr. Mouth (S35, T71N, R12W, Jefferson Co.) to confluence with Little Soap Creek (S1, T70N, R13W, Davis Co.)								
18.			X					
Little Soap Cr. Mouth (S1, T70N, R13W, Davis Co.) to confluence with an unnamed tributary (S21, T71N, R15W, Wapello Co.)								
19.			X					
Brush Cr. Mouth (S3, T70N, R14W, Davis Co.) to confluence with an unnamed tributary (E 1/2, S25, T71N, R15W, Wapello Co.)								
20.			X					
Bear Cr. Mouth (S19, T70N, R14W, Davis Co.) to confluence with an unnamed tributary (E 1/2, S4, T70N, R15W, Davis Co.)								
21.			X					
South Soap Cr. Mouth (S21, T70N, R15W, Davis Co.) to Lake Dam (S29, T70N, R16W, Appanoose Co.)								
VILLAGE CR. AND ITS TRIBUTARIES								
22.			X					
Village Cr. Mouth (S9, T71N, R13W, Wapello Co.) to confluence with Sandy Cr. (NW 1/4, S9, T71N, R14W, Wapello Co.)								
SOUTH AVERY CR. AND ITS TRIBUTARIES								
23.			X					
South Avery Cr. Mouth (S31, T73N, R14W, Wapello Co.) to confluence with an unnamed tributary (NE 1/4, S15, T72N, R15W, Wapello Co.)								
MIDDLE AVERY CR. AND ITS TRIBUTARIES								
24.			X					
Middle Avery Cr. Mouth (S25, T73N, R15W, Wapello Co.) to confluence with White Ash and Little Avery Crs. (W. line, S12, T72N, R16W, Monroe Co.)								
25.			X					
North Avery Cr. Mouth (S34, T73N, R15W, Wapello Co.) to confluence with an unnamed tributary (Center, S34, T73N, R16W, Monroe Co.)								
MILLER CR. AND ITS TRIBUTARIES								
26.			X					
Miller Cr. Mouth (Wapello Co.) to confluence with an unnamed tributary (Sec. 29, T73N, R16W, Monroe Co.)								
MUCHAKINOCK CR. AND ITS TRIBUTARIES								
27.			X					
Muchakinoch Cr. Confluence with Little Muchakinoch Cr. (S34, T75N, R16W, Mahaska Co.) to confluence with an unnamed tributary (NW 1/4, SW 1/4, S27, T76N, R17W, Mahaska Co.)								
CEDAR CR. AND ITS TRIBUTARIES								
28.		X						
Cedar Cr. Mouth (S33, T75N, R17W, Mahaska Co.) to confluence with North Cedar Cr. (NE 1/4, S15, T74N, R18W, Marion Co.)								
29.			X					
Cedar Cr. Confluence with North Cedar Creek (NE 1/4, S15, T74N, R18W, Marion Co.) to confluence with Mormon Branch (S5, T71N, R18W, Monroe Co.)								

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
DES MOINES								
MAJOR RIVER - LOWER DES MOINES R. AND ITS								
TRIBUTARIES								
MIDDLE RIVER AND ITS TRIBUTARIES								
44.		X						
Middle R. Confluence with Flecher Branch (Madison Co.) to confluence with Bush Branch (S8, T75N, R29W, Madison Co.)								
45.			X					
Middle R. Confluence with Bush Branch (S8, T75N, R29W, Madison Co.) to confluence with an unnamed tributary (NE 1/4, S17, T78N, R32W, Guthrie Co.)								
46.			X					
Cavitt Cr. Mouth (Warren Co.) to confluence with an unnamed tributary (S13, T76N, R24W, Warren Co.)								
47.			X					
Clanton Cr. Confluence with Jones Cr. (Madison Co.) to the confluence with the North Fork and South Fork Clanton Cr. (SW 1/4, S10, T74N, R27W, Madison Co.)								
48.			X					
Clanton Cr. Mouth (N 1/2, S28, T76N, R25W, Warren Co.) to confluence with North & South Fork Clanton Cr.								
49.			X					
Jones Cr. Mouth (Madison Co.) to confluence with an unnamed tributary (S28, T75N, R27W, Madison Co.)								
50.			X					
South Fork Clanton Cr. Mouth (Madison Co.) to confluence with an unnamed tributary (NE 1/4 of NW 1/4, S36, T74N, R28W, Madison Co.)								
51.			X					
North Fork Clanton Cr. Mouth (Madison Co.) to confluence with an unnamed tributary (S8/9, T74N, R28W, Madison Co.)								
52.			X					
Welty Cr. Mouth (S14, T75N, R29W, Madison Co.) to confluence with Rocky Branch (SE 1/4, S22, T75N, R29W, Madison Co.)								
53.			X					
South Fork Middle R. Mouth (S35, T78N, R32W, Guthrie Co.) to confluence with an unnamed tributary (S33, T78N, R32W, Guthrie Co.)								
NORTH R. AND ITS TRIBUTARIES								
54.		X						
North R. Mouth (Polk Co.) to County Rd. R63 (S16, T77N, R24W, Warren Co.)								
55.		X						X
North R. County Rd. R63 (S16, T77N, R24W, Warren Co.) to confluence with Badger Cr. (S33, T77N, R25W, Warren Co.)								
56.			X					X
North R. Confluence with Badger Cr. (S33, T77N, R25W, Warren Co.) to confluence with North Branch North R. (S33, T77N, R27W, Madison Co.)								
57.			X					
North R. Confluence with North Branch North R. (Madison Co.) to confluence with an unnamed tributary (S11, T77N, R31W, Adair Co.)								
58.			X					
Middle Cr. Mouth (Warren Co.) to Lake Colechester Dam (NE 1/4, S1, T77N, R25W, Warren Co.)								

DES MOINES MAJOR RIVER - UPPER DES MOINES R. AND ITS TRIBUTARIES RACCOON R. AND ITS TRIBUTARIES		A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
	Sugar Cr.								
75.	Mouth (S26, T78N, R26W, Dallas Co.) to confluence with an unnamed tributary from the West (S8, T78N, R26W, Dallas Co.)			X					
	S. Raccoon R.								
76.	Mouth (Dallas Co.) to confluence with Brushy Cr. (Guthrie Co.)		X						
	S. Raccoon R.								
77.	Confluence with Brushy Cr. (S22, T79N, R31W, Guthrie Co.) to confluence with Frost Cr. (S18, T80N, R32W, Guthrie Co.)			X					
	Panther Cr.								
78.	Mouth (S16, T78N, R28W, Dallas Co.) to confluence with West & East Panther Cr. (S16, T79N, R28W, Dallas Co.)			X					
	West Panther Cr.								
79.	Mouth (S16, T79N, R28W, Dallas Co.) to confluence with an unnamed tributary (NW 1/4, S9, T79N, R28W, Dallas Co.)			X					
	Bear Cr.								
80.	Mouth (S17, T78N, R28W, Dallas Co.) to confluence with an unnamed tributary (SW 1/4, S25, T78N, R29W, Dallas Co.)			X					
	Middle Raccoon R.								
81.	Mouth (Dallas Co.) to Redfield Dam (S5, T78N, R29W, Dallas Co.)	X	X						
	Middle Raccoon R.								
82.	Redfield Dam (Dallas Co.) to Lake Panorama Dam (S31, T80N, R30W, Guthrie Co.)	X	X						X
	Middle Raccoon R.								
83.	City of Panora Water Works intakes						X		
	Middle Raccoon R.								
84.	Lake Panorama	X	X						X
	Middle Raccoon R.								
85.	Lake Panorama to confluence with Willey Branch (A26, T83N, R34W, Carroll Co.)	X	X						
	Middle Raccoon R.								
86.	Confluence with Willey Branch (Carroll Co.) to confluence with an unnamed tributary (S8, T84N, R35W, Carroll Co.)			X					
	Mosquito Cr.								
87.	Mouth (S34, T79N, R29W, Dallas Co.) to confluence with an unnamed tributary (S21, T81N, R30W, Guthrie Co.)			X					
	Bay Branch								
88.	Mouth (S9, T79N, R30W, Guthrie Co.) to dam at Bay Branch Marsh (NW 1/4, S27, T80N, R30W, Guthrie Co.)			X					
	Willow Cr.								
89.	Mouth (Guthrie Co.) to confluence with an unnamed tributary (SE 1/4, S30, T83N, R32W, Green Co.)			X					
	Willey Branch								
90.	Mouth (Carroll Co.) to confluence with an unnamed tributary (S29, T83N, R34W, Carroll Co.)			X					

DES MOINES MAJOR RIVER - UPPER DES MOINES R. AND ITS TRIBUTARIES RACCOON R. AND ITS TRIBUTARIES		A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
91.	Spring Branch Mouth (Carroll Co.) to confluence with an unnamed tributary (S16, T83N, R34W, Carroll Co.)			X					
92.	Unnamed Cr. Mouth (S29, T84N, R34W, Carroll Co.) to the northern road crossing on the section line between S24, T84N, R35W, and S19, T84N, R34W, Carroll Co.)			X					
93.	Deer Cr. Mouth (S15, T78N, R30W, Guthrie Co.) to confluence with an unnamed tributary (NE1/4, NE1/4 S19, T78N, R30W, Guthrie Co.)			X					
94.	Brushy Creek Mouth (Guthrie Co.) to confluence with an unnamed tributary (S6, T82N, R34W, Carroll Co.)			X					
95.	Brushy Creek Mouth (S22, T79N, R31W, Guthrie Co.) to confluence with an unnamed tributary (S6, T82N, R34W, Carroll Co.)			X					
96.	N. Raccoon R. Mouth (Dallas Co.) to Hwy. 286 (S17, T85N, R33W, Carroll Co.)	X	X						X
97.	N. Raccoon R. Hwy. 286 (Carroll Co.) to Sac. Co. Rd. M54 (S24, T88N, R36W, Sac Co.)	X	X						
98.	North Raccoon River Sac Co. Road M54 (S24, T88N, R36W, Sac Co.) to confluence with D.D. 101 (S36, T91N, R36W, Buena Vista Co.)		X						
99.	N. Raccoon R. Confluence with Drainage Ditch No. 101 (S36, T91N, R36W, Buena Vista Co.) to confluence with unnamed tributary (S4, T92N, R36W, Buena Vista Co.)			X					
100.	Hickory Cr. Mouth (S17, T79N, R27W, Dallas Co.) to confluence with unnamed tributary (westernmost tributary in W 1/2, S16, T79N, R27W, Dallas Co.)			X					
101.	Swan Lake Branch Mouth (S28, T81N, R28W, Dallas Co.) to west line S4, T80N, R28W, Dallas Co.			X					
102.	Snake Cr. Mouth (S2, T81N, R29W, Dallas Co.) to north line S26, T82N, R29W, Greene Co.			X					
103.	Greenbrier Cr. Mouth (S5, T81N, R29W, Dallas Co.) to west line S13, T82N, R31W, Greene Co.			X					
104.	Dead Brier Cr. Mouth (S36, T82N, R30W, Greene Co.) to confluence with an unnamed tributary (NE1/4, S26, T82N, R30W, Greene Co.)			X					
105.	Buttrick Cr. Mouth (S26, T83N, R30W, Greene Co.) to confluence with East & West Buttrick Cr. (SE 1/4, S25, T84N, R30W, Greene Co.)			X					

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
DES MOINES								
MAJOR RIVER - UPPER DES MOINES R. AND ITS								
TRIBUTARIES								
BIG CREEK (AKA BIG CR. LAKE OUTLET) AND ITS								
TRIBUTARIES								
Big Creek (aka Big Cr. Lake Outlet)								
134.		X						
Mouth (Polk Co.) to Big Creek Lake Dam (SW 1/4, S26, T81N, R25W, Polk Co.)								
Big Creek (aka Big Cr. Lake Outlet)								
135.	X	X						
Big Cr. Lake								
Big Cr.								
136.			X					
Upper end of Big Creek Lake (Polk Co.) to confluence with an unnamed tributary (SE 1/4, S33, T83N, R25W, Boone Co.)								
Wolf Cr.								
137.			X					
Mouth (S36, T81N, R25W, Polk Co.) to North line, S25, T81N, R25W, Polk Co.								
BEAR CR. AND ITS TRIBUTARIES								
Bear Cr.								
138.			X					
Mouth (S29, T83N, R26W, Boone Co.) to confluence with an unnamed tributary (SE 1/4, S24, T83N, R27W, Boone Co.)								
HONEY CR. AND ITS TRIBUTARIES								
Honey Cr.								
139.		X						
Mouth (Boone Co.) to bridge crossing at (NW 1/4, S33, T84N, R26W, Boone Co.)								
BLUFF CR. AND ITS TRIBUTARIES								
Bluff Cr.								
140.			X					
Mouth (S22, T84N, R27W, Boone Co.) to dam/spillway at Don Williams Lake (NE 1/4, SW 1/4, S5, T84N, R27W, Boone Co.)								
SKILLET CR. AND ITS TRIBUTARIES								
Skillet Cr.								
141.			X					
Mouth (S16, T86N, R27W, Webster Co.) to confluence with an unnamed tributary (NW 1/4, SE 1/4, S14, T86N, R28W, Webster Co.)								
BOONE R. AND ITS TRIBUTARIES								
Boone R.								
142.	X	X						X
Mouth (Webster Co.) to State Hwy. 17 (S18, T88N, R25W, Hamilton Co.)								
Boone R.								
143.		X						X
State Hwy. 17 to confluence with Brewers Creek (Hamilton Co.)								
Boone R.								
144.		X						
Confluence with Brewers Creek (Hamilton Co.) to confluence with Middle Branch Boone R. (Wright Co.)								
Boone R.								
145.			X					
Confluence with Middle Branch Boone R. (Wright Co.) to confluence with Drainage Ditch No. 10 (S29, T95N, R26W, Hancock Co.)								
White Fox Cr.								
146.			X					
Mouth (S33, T89N, R25W, Hamilton Co.) to confluence with an unnamed tributary (E 1/2 of the SE 1/4 of S36, T91N, R25W, Wright Co.)								
Buck Cr.								
147.			X					
Mouth (S28, T89N, R25W, Hamilton Co.) to confluence with Drainage Ditch No. 144 (S11, T88N, R25W, Hamilton Co.)								

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
DES MOINES								
MAJOR RIVER - UPPER DES MOINES R. AND ITS								
TRIBUTARIES								
BOONE R. AND ITS TRIBUTARIES								
Eagle Cr.								
148. Mouth (S6, T89N, R25W, Hamilton Co.) to confluence with Little Eagle Cr. (S9, T91N, R25W, Wright Co.)			X					
D.D. 94								
149. Mouth (Wright Co.) to West line of S3, T90N, R26W, Wright Co.		X						
Otter Cr.								
150. Mouth (Wright Co.) to confluence with West Otter Cr. (S31, T93N, R25W, Wright Co.)		X						
Prairie Cr.								
151. Mouth (S30, T93N, R26W, Wright Co.) to confluence with D.D. No. 116 (S24, T94N, R28W, Kossuth Co.)			X					
Middle Branch Boone R.								
152. Mouth (Hancock Co.) to confluence with an unnamed tributary (S31, T95N, R25W, Hancock Co.)		X						
BRUSHY CR. AND ITS TRIBUTARIES								
Brushy Cr.								
153. Mouth (S15, T87N, R27W, Webster Co.) to Brushy Creek Lake Dam (S34, T88N, R27W, Webster Co.)			X					
Brushy Cr.								
154. Upper extent of Brushy Creek Lake (W. line of S16, T88N, R27W) to confluence with unnamed tributary (SE 1/4, S34, T89N, R27W, Webster Co.)			X					
PRAIRIE CR. AND ITS TRIBUTARIES								
Prairie Cr.								
155. Mouth (S35, T88N, R28W, Webster Co.) to confluence with D.D. No. 29 (S25, T88N, R29W, Webster Co.)			X					
SOLDIER CR. AND ITS TRIBUTARIES								
Soldier Cr.								
156. Mouth (S19, T89N, R28W, Webster Co.) to confluence with unnamed tributary (S26, T90N, R28W, Webster Co.)			X					
LIZARD CR. AND ITS TRIBUTARIES								
Lizard Cr.								
157. Mouth (S19, T89N, R28W, Webster Co.) to confluence with unnamed tributary (N 1/2, S31, T90N, R30W, Webster Co.)		X						
Lizard Cr.								
158. Confluence with unnamed tributary (N 1/2, S31, T90N, R30W, Webster Co.) to confluence with Drainage Ditch No. 164 (S31, T91N, R31W, Pocahontas Co.)			X					
S. Br. Lizard Cr.								
159. Mouth (S23, T89N, R29W, Webster Co.) to confluence with unnamed tributary (S25, T90N, R32W, Pocahontas Co.)			X					
Spring Cr.								
160. Mouth (S33, T89N, R29W, Webster Co.) to confluence with Prairie Creek (S14, T88N, R30W, Webster Co.)			X					
N. Br. Lizard Cr.								
161. Mouth (S2, T91N, R31W, Pocahontas Co.) to confluence with Drainage Ditch No. 169 (S6, T91N, R31W, Pocahontas Co.)			X					

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
DES MOINES								
MAJOR RIVER - UPPER DES MOINES R. AND ITS								
TRIBUTARIES								
BADGER CR. AND ITS TRIBUTARIES								
Badger Cr.								
162.			X					
Mouth (S30, T90N, R28W, Webster Co.) to Badger Lake Dam (S19, T90N, R28W, Webster Co.)								
DEER CR. AND ITS TRIBUTARIES								
Deer Cr.								
163.			X					
Mouth (S13, T90N, R29W, Webster Co.) to confluence with unnamed tributary (S16, T90N, R29W, Webster Co.)								
BEAVER CR. AND ITS TRIBUTARIES								
Beaver Cr.								
164.			X					
Mouth (S32, T91N, R28W, Humboldt Co.) to confluence with unnamed tributary (S28, T91N, R28W, Humboldt Co.)								
E. FK. DES MOINES R. AND ITS TRIBUTARIES								
E. Fk. Des Moines R.								
165.	X	X						X
Mouth (Humboldt Co.) to Divine bridge access Hwy. 169 (S26, T94N, R29W, Kossuth Co.)								
E. Fk. Des Moines R.								
166.		X						X
Divine bridge access Hwy. 169 (S26, T94N, R29W, Kossuth Co.) to County Rd. B63 (S23, T94N, R29W, Kossuth Co.)								
E. Fk. Des Moines R.								
167.		X						
County Rd. B63 (Kossuth Co.) to confluence with Buffalo Cr. (Kossuth Co.)								
East Fork Des Moines R.								
168.		X						
Confluence with Buffalo Cr. (S20, T97N, R28W, Kossuth Co.) to outlet control structure Tuttle Lake (aka Okamanpeedan Lake) (S14, T100N, R32W, Emmet Co.)								
Bloody Run								
169.			X					
Mouth (S33, T93N, R28W, Humboldt Co.) to confluence with unnamed tributary (S1, T92N, R29W, Humboldt Co.)								
Lotts Cr.								
170.			X					
Mouth (S17, T93N, R28W, Humboldt Co.) to confluence with D.D. No. 79 (SE 1/4, S15, T94N, R30W, Kossuth Co.)								
Black Cat Cr.								
171.			X					
Mouth (S24, T96N, R29W, Kossuth Co.) to North line (S5, T97N, R30W, Kossuth Co.)								
Plum Cr.								
172.			X					
Mouth (S17, T96N, R28W, Kossuth Co.) to confluence with an unnamed tributary (S16, T96N, R27W, Kossuth Co.)								
Lindsey Cr.								
173.			X					
Mouth (S28, T96N, R28W, Kossuth Co.) to confluence with an unnamed tributary (aka D.D. No. 36) (S30, T97N, R27W, Kossuth Co.)								
Buffalo Cr.								
174.			X					
Mouth (S20, T97N, R28W, Kossuth Co.) to confluence with D.D. No. 48 (S33, T98N, R26W, Winnebago Co.)								
Union Slough								
175.				X				
Mouth (S9, T97N, R28W, Kossuth Co.) to outlet control structure (aka Des Moines R./Blue Earth R. basin divide) (N 1/2, S14, T98N, R28W, Kossuth Co.)								

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
DES MOINES								
MAJOR RIVER - UPPER DES MOINES R. AND ITS TRIBUTARIES								
E. FK. DES MOINES R. AND ITS TRIBUTARIES								
North Buffalo Cr. (aka Little Buffalo Cr.)								
176.			X					
Mouth (S4, T97N, R27W, Kossuth Co.) to confluence with an unnamed tributary (S5, T98N, R26W, Winnebago Co.)								
Mud Cr.								
177.			X					
Mouth (S1, T97N, R29W, Kossuth Co.) to confluence with an unnamed tributary (North line S3/4, T98N, R29W, Kossuth Co.)								
Soldier Cr.								
178.			X					
Mouth (S36, T100N, R32W, Emmet Co.) to confluence with D.D. No. 4 (S27, T100N, R32W, Emmet Co.)								
INDIAN CR. AND ITS TRIBUTARIES								
Prairie Cr. (aka Ditch No. 61)								
179.			X					
Mouth (S1, T93N, R31W, Pocahontas Co.) to confluence with an unnamed tributary (S13, T94N, R31W, Palo Alto Co.)								
Indian Cr.								
180.			X					
Mouth (S24, T91N, R29W, Humboldt Co.) to confluence with Drainage Ditch No. 20 (S21, T91N, R29W, Humboldt Co.)								
PILOT CR. AND ITS TRIBUTARIES								
Pilot Cr.								
181.			X					
Mouth (S1, T92N, R31W, Pocahontas Co.) to confluence with an unnamed tributary (SW 1/4, S16, T93N, R32W, Pocahontas Co.)								
CYLINDER CR. AND ITS TRIBUTARIES								
Cylinder Cr.								
182.			X					
Mouth (NW 1/4, S28, T94N, R31W, Palo Alto Co.) to confluence with D.D. No. 15 (NW 1/4, S18, T96N, R31W, Palo Alto Co.)								
BEAVER CR. AND ITS TRIBUTARIES								
Beaver Cr.								
183.			X					
Mouth (S36, T93N, R31W, Pocahontas Co.) to confluence with an unnamed tributary (S12, T93N, R32W, Pocahontas Co.)								
SILVER CR. AND ITS TRIBUTARIES								
Silver Cr.								
184.			X					
Mouth (S35, T96N, R33W, Palo Alto Co.) to confluence with D.D. No. 62 (S23, T95N, R34W, Palo Alto Co.)								
JACK CR. AND ITS TRIBUTARIES								
Jack Cr.								
185.			X					
Mouth (S35, T97N, R33W, Palo Alto Co.) to Swan Lake outlet structure (S29, T99N, R32W, Emmet Co.)								
OLD CHANNEL - DES MOINES R. AND ITS TRIBUTARIES								
Old Channel - Des Moines R.								
186.		X						
Mouth (S26, T95N, R32W, Palo Alto Co.) to confluence with Ditch No. 41 (S29, T95N, R32W, Palo Alto Co.)								
BLUE EARTH R. AND ITS TRIBUTARIES								
Blue Earth R. (aka Middle Branch Blue Earth R.)								
187.			X					
Iowa-Minnesota state line (S12, T100N, R28W, Kossuth Co.) to confluence with an unnamed tributary (S9, T99N, R27W, Kossuth Co.)								

DES MOINES MAJOR RIVER - UPPER DES MOINES R. AND ITS TRIBUTARIES BLUE EARTH R. AND ITS TRIBUTARIES		A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
188.	West Fork Blue Earth R. (aka West Branch Blue Earth R.) Iowa-Minnesota state line (S9, T100N, R28W, Kossuth Co.) to confluence with an unnamed tributary (S30, T100N, R28W, Kossuth Co.)			X					
189.	Union Slough Ditch (aka Union Slough Outlet) Mouth (S9, T100N, R28W, Kossuth Co.) to outlet control structure (aka Des Moines R./Blue Earth R. basin divide) (N 1/2, S14, T98N, R28W, Kossuth Co.)			X					

SKUNK RIVER BASIN

The streams or stream segments named below in alphabetical order are referenced within the Water Use Designations for the Skunk River Basin. Reference numbers provided in the alphabetical list correspond to numbered stream segments in the Water Use Designations.

Ballard Cr. - 46	Indian Cr. - 40	S. Skunk R. - 32
Bear Cr. - 49	Long Cr. - 14	S. Skunk R. - 33
Benjamin Cr. - 39	Long Dick Cr. - 50	S. Skunk R. - 34
Big Cr. - 16	Lynn Cr. - 19	Skunk R. - 9
Big Cr. - 17	Middle Cr. - 56	Skunk R. - 11
Big Slough - 8	Mississippi R. - 1	Skunk R. - 12
Brush Cr. - 18	Mississippi R. - 2	Skunk R. - 13
Buckley Cr. - 37	Mississippi R. - 3	Snipe Cr. - 59
Cedar Cr. - 22	Mud Cr. - 15	South Skunk R. - 35
Cedar Cr. - 23	N. Skunk R. - 51	South Skunk R. - 36
Cedar Cr. - 54	N. Skunk R. - 52	Squaw Cr. - 48
Cherry Cr. - 38	N. Skunk R. - 53	Sugar Cr. - 5
Clear Cr. - 41	Oakland Mills Impoundment - 10	Sugar Cr. - 57
Competine Cr. - 27	Old South Skunk River Ch - 45	Unnamed Cr. - 4
Crooked Cr. - 28	Pitman Cr. - 6	W. Branch Indian Cr. - 42
Crow Cr. - 25	Rock Cr. - 24	W. Fk Crooked Cr. - 30
Dye Cr. - 44	Rock Cr. - 55	Walnut Cr. - 47
E. Branch Indian Cr. - 43	Rock Cr. - 58	West Branch Sugar Cr. - 7
East Fork Crooked Cr. - 29	Rock Cr. - 26	Wolf Cr. - 21
Fish Cr. - 20	S. Skunk R. - 31	

SKUNK MAJOR RIVER - MISSISSIPPI R. AND ITS TRIBUTARIES MISSISSIPPI R. AND ITS TRIBUTARIES		A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
1.	Mississippi R. Iowa-Missouri state line to confluence with the Skunk R.	X	X						
2.	Mississippi R. Keokuk Municipal Water Works intakes						X		
3.	Mississippi R. Fort Madison Municipal Water Works intakes						X		
4.	UNNAMED CR. AND ITS TRIBUTARIES Unnamed Cr. (aka Labalees Cr.) Mouth (S1, T65N, R5W, Lee Co.) to confluence with an unnamed tributary (E 1/2, S35, T66N, R5W, Lee Co.)			X					

	A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
SKUNK MAJOR RIVER - MISSISSIPPI R. AND ITS TRIBUTARIES								
SUGAR CR. AND ITS TRIBUTARIES								
5.			X					
Sugar Cr. Mouth (S23, T67N, R5W, Lee Co.) to confluence with an unnamed tributary (S 1/2, S16, T69N, R6W, Lee Co.)								
6.			X					
Pitman Cr. Mouth (S29/30 line, T68N, R5W, Lee Co.) to confluence with an unnamed tributary (S21, T68N, R5W, Lee Co.)								
7.			X					
West Branch Sugar Cr. Mouth (S11/14 line, T68N, R6W, Lee Co.) to confluence with an unnamed tributary (S3, T68N, R6W, Lee Co.)								
BIG SLOUGH AND ITS TRIBUTARIES								
8.		X						
Big Slough Mouth (S24, T68N, R3W, Lee Co.) to confluence with an unnamed tributary (S18, T68N, R2W, Lee Co.)								
SKUNK R. AND ITS TRIBUTARIES								
9.		X						
Skunk R. Mouth to Oakland Mills Dam Skunk R.								
10.	X	X						
Oakland Mills Impoundment Dam to N line of S14, T71N, R7W, Henry Co.								
11.						X		
Skunk R. City of Mt. Pleasant Water Works intake								
12.		X						
Skunk R. Oakland Mills Impoundment to Henry Co. Rd. (S3, T71, R7W)								
13.		X						X
Skunk R. Henry Co. Rd. (S3, T73N, R7W) to confluence of N. Skunk R. and S. Skunk R.								
14.			X					
Long Cr. Mouth (Des Moines Co.) to confluence with an unnamed tributary (S3, T69N, R4W, Des Moines Co.)								
15.			X					
Mud Cr. Mouth (S34, T70N, R5W, Henry Co.) to confluence with an unnamed tributary (S12, T70N, R5W, Henry Co.)								
16.		X						
Big Cr. Mouth (Henry Co.) to confluence with Saunders Branch (S17, T71N, R6W, Henry Co.)								
17.			X					
Big Cr. Confluence with Saunders Branch (Henry Co.) to confluence with Lawrence Creek (S5, T71N, R5W, Henry Co.)								
18.			X					
Brush Cr. Mouth (Henry Co.) to confluence with an unnamed tributary (S32, T71N, R5W, Henry Co.)								
19.			X					
Lynn Cr. Mouth (Henry Co.) to confluence with an unnamed tributary (S7, T72N, R6W, Henry Co.)								
20.			X					
Fish Cr. Mouth (S23, T70N, R6W, Henry Co.) to confluence with an unnamed tributary (S16, T70N, R6W, Henry Co.)								

SKUNK MAJOR RIVER - MISSISSIPPI R. AND ITS TRIBUTARIES SKUNK R. AND ITS TRIBUTARIES		A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
	Wolf Cr.								
21.	Mouth (S8, T71N, R7W, Henry Co.) to confluence with an unnamed tributary (S1, T71N, R8W, Jefferson Co.)			X					
	Cedar Cr.								
22.	Mouth (Henry Co.) to confluence with Little Cedar Cr. (S17, T70N, R7W, Henry Co.)		X						
	Cedar Cr.								
23.	Confluence with Little Cedar Cr. (Sec. 17, T70N, R7W, Henry Co.) to confluence with an unnamed tributary (NW 1/4, of the NE 1/4, S24, T74N, R15W, Mahaska Co.)			X					
	Rock Cr.								
24.	Mouth (Jefferson Co.) to confluence with Jones Br. (Sec. 29, T71N, R8W, Jefferson Co.)			X					
	Crow Cr.								
25.	Mouth (Jefferson Co.) to confluence with an unnamed tributary (NW 1/4 of SW 1/4, S31, T72N, R9W, Jefferson Co.)			X					
	Rock Cr.								
26.	Mouth (S34, T72N, R11W, Jefferson Co.) to confluence with an unnamed tributary (NE1/4, S5, T71N, R11W, Jefferson Co.)			X					
	Competine Cr.								
27.	Mouth (Jefferson Co.) to confluence with an unnamed tributary (S15, T73N, R12W, Wapello Co.)			X					
	Crooked Cr.								
28.	Mouth (S1, T73N, R8W, Jefferson Co.) to confluence with East and West Fork Crooked Cr. (S24, T74N, R7W, Washington Co.)			X					
	East Fork Crooked Cr.								
29.	Mouth (S24, T74N, R7W, Washington Co.) to confluence with Phillips Creek (S8, T73N, R5W, Henry Co.)			X					
	W. Fk. Crooked Cr.								
30.	Mouth (Washington Co.) to confluence with an unnamed tributary (SW 1/4, S21, T76N, R9W, Washington Co.)			X					
	S. Skunk R.								
31.	Mouth (Keokuk Co.) to Hwy. 21 (S34, T75N, R13W, (Keokuk Co.)		X						X
	S. Skunk R.								
32.	Hwy. 21 (Keokuk Co.) to confluence with Indian Cr. (Jasper Co.)		X						
	S. Skunk R.								
33.	At Oskaloosa						X		
	S. Skunk R.								
34.	Confluence with Indian Creek (Jasper Co.) to Ames Water Works Dam (S36, T84N, R24W, Story Co.)			X					
	South Skunk R.								
35.	Ames Waterworks Dam (S36, T84N, R24W, Story Co.) to North line S6, T85N, R23W, Story Co.		X						
	South Skunk R.								
36.	North line S6, T85N, R23W, Story Co. to confluence with D.D. No. 71 (S11, T86N, R24W, Hamilton Co.)			X					

SKUNK MAJOR RIVER - MISSISSIPPI R. AND ITS TRIBUTARIES SKUNK R. AND ITS TRIBUTARIES		A	B(WW)	B(LR)	B(LW)	B(CW)	C	HQ	HQR
	N. Skunk R.								
52.	Confluence with Cedar Cr. (S15, T75N, R12W, Keokuk Co.) to Poweshiek-Mahaska co. line			X					X
	N. Skunk R.								
53.	Poweshiek-Mahaska co. line to confluence with Snipe Cr. (S22, T81N, R19W, Jasper Co.)			X					
	Cedar Cr.								
54.	Mouth (S15, T75N, R12W, Keokuk Co.) to confluence with an unnamed tributary (S34, T76N, R13W, Keokuk Co.)			X					
	Rock Cr.								
55.	Mouth (S9, T75N, R12W, Keokuk Co.) to confluence with unnamed tributary (NE 1/4, S34, T76N, R12W, Keokuk Co.)			X					
	Middle Cr.								
56.	Mouth (S35, T76N, R14W, Mahaska Co.) to Hwy. 146 road crossing at S1, T76N, R16W, Mahaska Co.)			X					
	Sugar Cr.								
57.	Mouth (Poweshiek Co.) to confluence with an unnamed tributary (SW 1/4, Sec. 24, T80N, R17W, Jasper Co.)			X					
	Rock Cr.								
58.	Mouth (S5, T79N, R17W, Jasper Co.) to Rock Creek Lake Dam (S17, T80N, R17W, Jasper Co.)			X					
	Snipe Cr.								
59.	Mouth (S22, T81N, R19W, Jasper Co.) to confluence with Little Snipe Cr. (S14, T81N, R19W, Jasper Co.)			X					